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CORRECTIVE ACTION PLAN SITE 2029 DIESEL FUEL MARINE FACILITY NSB KINGS  
BAY GA  
12/1/1994  
ABB ENVIRONMENTAL SERVICES, INC

## CORRECTIVE ACTION PLAN

**SITE 2029  
DIESEL FUEL MARINE FACILITY  
NAVAL SUBMARINE BASE KINGS BAY  
KINGS BAY, GEORGIA**

**Unit Identification Code: N42237**

**Contract No. N62467-89-D-0317**

**Prepared by:**

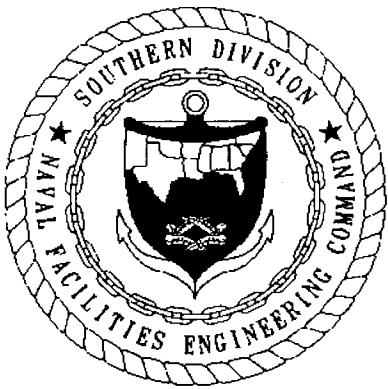
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**December 1994**



## FOREWORD

Subtitle I of the Hazardous and Solid Waste Amendments (HSWA) of 1984 to the Solid Waste Disposal Act (SWDA) of 1965 established a national regulatory program for managing underground storage tanks (USTs) containing hazardous materials, especially petroleum products. Hazardous wastes stored in USTs were already regulated under the Resource Conservation and Recovery Act (RCRA) of 1976. Subtitle I requires that the U.S. Environmental Protection Agency (USEPA) promulgate UST regulations. The program was designed to be administered by the individual States, which were allowed to develop more stringent standards, but not less stringent standards. Local governments were permitted to establish regulatory programs and standards that are more stringent, but not less stringent than either State or Federal regulations. The USEPA UST regulations are found in the Code of Federal Regulations, Title 40, Part 280 (40 CFR 280), *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks*, and Title 40 CFR 281, *Approval of State Underground Storage Tank Programs*. Title 40 CFR 280 was revised and published on September 23, 1988, and became effective December 22, 1988.

The Navy's UST program policy is to comply with all Federal, State, and local regulations pertaining to USTs. This report was prepared to satisfy the requirements of the Georgia Underground Storage Tank (GUST) Rules, Chapter 391-3-15, of April 1993.

Questions regarding this report should be addressed to the Commanding Officer, Naval Submarine Base (NSB), Kings Bay, Georgia, or to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Code 1844, at DSN 563-0607 or 803-743-0607.

## EXECUTIVE SUMMARY

Naval Submarine Base (NSB), Kings Bay, is located in the southeast corner of Georgia, approximately 8 miles north of the Georgia-Florida border in Camden County. The county has a population of 12,800, primarily residents of St. Marys, Kingsland, and Woodbine. NSB Kings Bay covers a total area of approximately 16,168 acres. The closest community to NSB is the city of St. Marys, which is located on the southern boundary of the base. Kings Bay (the body of water) borders the base on the east and empties into Cumberland Sound and eventually the Atlantic Ocean.

Site 2029 is a diesel fuel marine facility that supports marine operations at NSB Kings Bay. It is the location of two 220,000-gallon steel aboveground storage tanks (ASTs) containing diesel fuel. Each tank is surrounded by a concrete lined berm that has a catch basin and drain line for the removal of rainwater and diesel-contaminated water drawn off the tank. The drain lines release effluent into an oil-water separator. The suspected sources of contamination at the site are a leaking drain lines in the Tank 2 berm area and the oil-water separator.

ABB Environmental Services, Inc. (ABB-ES), conducted a contamination assessment (CA) at Site 2029 from November 29, 1993, through April 1, 1994. The CA included advancing 28 soil borings and installing 9 monitoring wells to assess the degree and extent of soil and groundwater petroleum contamination at the site.

### Findings

- The subsurface soil was composed primarily of reddish brown, grayish brown, and black silty-sand and limestone fill material.
- The groundwater in the surficial aquifer flows southeast.
- No free floating petroleum product was observed in monitoring wells at Site 2029.
- Laboratory analytical results of groundwater samples did not exceed any Federal or Georgia State maximum contaminant levels (MCL).
- Total recoverable petroleum hydrocarbon (TRPH) measurements in soil samples collected from SB5 (1,110 parts per million [ppm]), SB15 (1,580 ppm), SB17 (122 ppm), SB18 (20,900 ppm), SB20 (10,300 ppm), and SB21 (33,200 ppm) exceeded the State target concentration of 100 ppm.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations were below method detection limits in discrete soil samples collected outside the bermed area. BTEX was detected in three soil samples (SB15, SB18, and SB21) inside the bermed area at concentrations below the State target concentration of 20 ppm.
- An inventory of public water supply systems within 3 miles of the site has identified three public water supply wells that vary in depth from 800 feet below land surface (bls) to 894 feet bls. These three wells are screened at depths that would typically preclude contamination from Site 2029.

### Conclusions

- The source of the petroleum contamination has been abated by repairing the leaking drain lines.
- There does not appear to be a significant dissolved plume in the groundwater at the site.
- Soil excessively contaminated with TRPH appears to be restricted to two areas: one beneath the Tank 2 containment area and one near the oil-water separator.
- No soil excessively contaminated with BTEX was identified at the site.

#### ACKNOWLEDGEMENTS

In preparing this report, the Underground Storage Tank Section of the Comprehensive Long-Term Environmental Action, Navy group at ABB Environmental Services, Inc., commends the support, assistance, and cooperation provided by the personnel at Naval Submarine Base Kings Bay, Georgia, and Southern Division, Naval Facilities Engineering Command.

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## GLOSSARY

The following list contains many of the acronyms, initialisms, abbreviations, and units of measure used in this report.

ABB-ES	ABB Environmental Services Inc.
AST	aboveground storage tank
BTEX	benzene, toluene, ethylbenzene, and xylenes
bls	below land surface
CA	contamination assessment
CAP	Corrective Action Plan
CFR	Code of Federal Regulations
CompQAP	Comprehensive Quality Assurance Plan
°F	degrees Fahrenheit
ft/day	feet per day
ft/ft	feet per foot
GA DNR	Georgia Department of Natural Resources
GEPD	Georgia Environmental Protection Division
GUST	Georgia Underground Storage Tank
HSWA	Hazardous and Solid Waste Amendments of 1984
ID	inside diameter
K	hydraulic conductivity
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
MTBE	methyl tert butyl ether
NAD	North American Datum
NSB	Naval Submarine Base
PAH	polynuclear aromatic hydrocarbons
POA	plan of action
ppb	parts per billion
ppm	parts per million
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
SWDA	Solid Waste Disposal Act of 1965
T	transmissivity
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons

**GLOSSARY (Continued)**

USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UST	underground storage tank
V	average pore water velocity

## **1.0 PLAN CERTIFICATION**

### **1.1 CORRECTIVE ACTION PLAN (CAP) CERTIFICATION.**

I hereby certify that the information contained in this plan and all attachments is true, accurate, and complete, and the plan satisfies all the criteria and requirements of Rule 391-3-15-.09 of the Georgia Underground Storage Tank Management Rules.

Signature (Owner/Operator)

NSB KINGS BAY  
KINGS BAY, GEORGIA

## 1.2 PROFESSIONAL REVIEW CERTIFICATION.

The contamination assessment (CA) contained in this report was prepared using sound hydrogeologic principles and judgment. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report. If conditions are revealed that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. The findings are relevant to the dates of the investigation, but should not be relied upon to represent site conditions at substantially later dates. This Corrective Action Plan (CAP) was developed for the Naval Submarine Base (NSB) Kings Bay, Site 2029, Kings Bay, Georgia, and should not be construed to apply to any other site.

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Larry W. Smith  
Professional Geologist  
Georgia P.G. No. 000796

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Date

## 2.0 EXTENT OF CONTAMINATION

**2.1 SITE BACKGROUND.** NSB Kings Bay is located in southeast Georgia, in Camden County, approximately 8 miles north of the Georgia-Florida border (Appendix A, Figure 1, Facility Location Map). Site 2029 is a diesel fuel marine facility that supports operations at NSB Kings Bay.

Two 220,000-gallon, steel aboveground storage tanks (ASTs) were installed at the site in 1988 (Appendix A, Figure 2). The ASTs are used to store diesel fuel. The ASTs are located in the eastern part of the site and are surrounded by a concrete-lined earthen berm capable of containing the entire tank contents. A concrete walkway is present along the top of the berm. Catch basins and drain lines remove rainwater and diesel-contaminated water from the AST berms. The drain lines empty into an oil-water separator located approximately 100 feet west of the bermed area. Oily waste from the oil-water separator is pumped into a waste oil AST located approximately 40 feet southeast of Building 2029. The waste oil AST is contained in a concrete secondary containment pad.

Building 2029, located in the west part of the site, is used as offices for site personnel. A truck fill stand and tank truck unloading area are located near the northeast corner of Building 2029. A railcar unloading area is located to the east of the site.

**2.2 DELINEATION OF CONTAMINANT PLUME.** Nine permanent, groundwater monitoring wells (designated NSB-2029-MW-1 through NSB-2029-MW-9) were installed at the site on December 14 and 15, 1993. Monitoring well locations are shown in Appendix A, Figure 3. No monitoring wells were installed inside the bermed area surrounding the ASTs due to inaccessibility. Monitoring wells were installed to depths ranging from 12 to 14 feet below land surface (bls). Monitoring well construction methodologies and material are discussed in Appendix B, Investigative Methodologies and Procedures. For simplicity, the prefix "NSB-2029-" has been omitted from figures and tables in this report.

Monitoring wells were checked for the presence of free-floating petroleum product by visual observation of a groundwater sample collected using an extruded Teflon™ bailer. Free product was not observed in any monitoring well.

Groundwater samples were collected from monitoring wells on December 17, 1993. Groundwater samples were analyzed by an analytical laboratory for benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (USEPA) Method 602, for methyl tert-butyl ether (MTBE) by modified USEPA Method 602, for polynuclear aromatic hydrocarbons (PAHs) by USEPA Method 8310, and for total recoverable petroleum hydrocarbons (TRPH) by USEPA Method 418.1. A duplicate sample, equipment blank, trip blank, and laboratory blanks were analyzed with the monitoring well groundwater samples. Laboratory analytical data sheets are included as Appendix C, and the results are summarized in Appendix D, Table 1. (Note: BTEX, MTBE, and TRPH concentrations are reported in parts per million [ppm]; PAH concentrations are reported in parts per billion [ppb]).

BTEX, MTBE, TRPH, and PAHs were detected in groundwater samples. The distribution of contaminants detected in groundwater samples is shown in Appendix A, Figure 4.

Benzene was detected in samples collected from two site monitoring wells, NSB-2029-MW6 and NSB-2029-MW8, at concentrations of 0.00198 ppm and 0.00127 ppm, respectively. Benzene concentrations in all other site groundwater samples were below method detection limits. The maximum contaminant level (MCL) for benzene is 0.005 ppm.

Toluene was detected in the groundwater sample collected from NSB-2029-MW8 at a concentration of 0.002 ppm. Toluene concentrations in all other site groundwater samples were below method detection limits. The Georgia State MCL for toluene is 1 ppm.

Ethylbenzene was detected in samples collected from NSB-2029-MW6 and NSB-2029-MW8 at concentrations of 0.0015 ppm and 0.00105 ppm, respectively. Ethylbenzene concentrations in all other site groundwater samples were below method detection limits. The Georgia State MCL for ethylbenzene is 0.7 ppm.

Xylenes were detected in the samples collected from NSB-2029-MW6 and NSB-2029-MW8 at concentrations of 0.001 ppm and 0.007 ppm, respectively. Total xylene concentrations in all other site groundwater samples were below method detection limits. The Georgia State MCL for total xylenes is 10 ppm.

MTBE was detected in samples from monitoring wells MW-4, MW-7, and MW-8. MTBE concentrations did not exceed 0.006 ppm. MTBE concentrations in all other site groundwater samples were below method detection limits. Currently, there are no State or Federal MCLs for MTBE.

Seventeen PAHs were detected in samples collected from all monitoring wells. Total PAH concentrations ranged from 0.004 ppb to 23.037 ppb. Currently, the only PAH MCL is for benzo(a)pyrene. Benzo(a)pyrene was detected in groundwater samples collected from four site monitoring wells (NSB-2029-MW3, NSB-2029-MW4, NSB-2029-MW6, and NSB-2029-MW9) at concentrations up to 0.028 ppb. The Federal MCL for benzo(a)pyrene is 0.2 ppb.

TRPH was detected in the groundwater sample collected from monitoring well MW-2 at a concentration of 0.32 ppm. TRPH concentrations in all other groundwater samples were below method detection limits. Currently, there is no State or Federal MCL for TRPH.

**2.3 DELINEATION OF SOIL CONTAMINATION.** Fourteen soil borings, NSB-2029-SB-1 through NSB-2029-SB-14, were advanced along the outer perimeter of the berm and in the vicinity of the oil-water separator on December 1 and 2, 1993. An additional 14 soil borings, NSB-2029-SB-15 through NSB-2029-SB-28, were advanced inside the berm near the catch basin by Tank 2 on March 29, 1994. Soil boring locations are shown in Appendix A, Figure 5. Soil boring advancement and sampling methodologies are discussed in Appendix B, Investigative Methodologies and Procedures.

Soil samples were collected from each boring and were used to assess the horizontal and vertical extent of petroleum contamination in soil, characterize

the type of subsurface material, and aid in the placement of groundwater monitoring wells. A lithologic cross-section transects map and two stratigraphic cross sections are shown in Appendix A, Figures 6, 7, and 8. These maps are based on soil boring and monitoring well data. This data indicates that subsurface material at the site is primarily composed of fill material.

Soil samples collected during the December 1993 phase of the CA were retrieved from 2 to 4 feet bls and 4 to 6 feet bls. Soil samples collected during the March 1994 phase of the CA were collected at a depth of 1 foot bls. Soil samples were analyzed by a commercial laboratory for BTEX by USEPA Method 8020 and for TRPH by USEPA Method 418.1. Duplicate soil samples, equipment blanks, trip blanks, and multiple laboratory blanks were also analyzed during the investigation.

The December 1993 and March 1994 BTEX and TRPH analyses are summarized in Appendix D, Tables 2 and 3, respectively. BTEX were detected in only the samples collected from soil borings SB-15, SB-18, and SB-21, which are located in the vicinity of the diesel release near Tank 2. Total BTEX concentrations were below the State target level of 20 ppm. BTEX detected in soil appears to be restricted to the immediate vicinity of the catch basin near Tank 2 (Appendix A, Figure 9).

TRPH were detected in samples collected from 17 soil borings. TRPH concentrations exceeded the State target level of 100 ppm in five samples collected near the catch basin by Tank 2 and in one sample collected near the oil-water separator (Appendix A, Figure 10). TRPH concentrations in soil exceeding 100 ppm appear to be limited to a small area south of the oil-water separator and to the immediate vicinity of the catch basin near Tank 2.

**2.4 GROUNDWATER FLOW DIRECTION.** Depth to groundwater was measured using an electric water-level indicator and an engineering tape divided into increments of 0.01 foot. Water table elevations were calculated by subtracting the measured depth to groundwater from the surveyed elevation at the top of the well casing. Monitoring well casing elevations were referenced to the Georgia State Coordinate System, East Zone, North American Datum (NAD) 83. Two control monuments were used for horizontal and vertical control for Site 2029. The control monument PCM-2 has coordinates of 287465.970N and 688948.150E; control monument PCM-3 has coordinates of 285049.840N and 689766.220E. Each of these monuments has been noted and illustrated in Appendix A, Figure 11.

Groundwater levels were recorded on December 16, 1993. These measurements are presented in Table 4, Appendix D, and were used to construct a water table elevation contour map (Appendix A, Figure 12) and a flow net (Appendix A, Figure 13). The flowlines exhibit the direction of groundwater flow. The surficial (unconfined) water table map indicates the water table slopes to the southeast ( $1.5 \times 10^{-3}$  feet per foot [ft/ft]), indicating that surficial groundwater at the site is flowing to the southeast.

**2.5 HYDROGEOLOGY AND SOIL TOPOGRAPHY.** The hydrogeology for Site 2029 is described on a regional scale and a site-specific scale. The soil topography for Site 2029 is described on regional scale. This information is provided in the following subsections.

**2.5.1 Regional Hydrogeology** The Kings Bay region is located within the Coastal Plain physiographic province along the Georgia coast line. Seven different depositional shoreline complexes have been identified in the area around Kings Bay that are the result of sea level fluctuations. The shoreline complexes have not been accurately dated, but are of approximate Pleistocene and Holocene age.

Unless otherwise stated the principal source of the hydrogeologic information presented below is the *Hydrogeology of the Floridan Aquifer System in Southeast Georgia and Adjacent Parts of Florida and South Carolina*, U.S. Geological Survey (USGS) Professional Paper 1403-D (Krause and Randolph, 1989).

The uppermost aquifer in the Kings Bay area is the unconfined water table (surficial) aquifer. The upper confining unit is located below the surficial aquifer. The primary artesian aquifer, or the Floridan aquifer system, is located below the upper confining unit, Appendix D, Table 5. Appendix A, Figure 14, shows the conceptual model of the Floridan aquifer system from the Gulf Trough located to northwest of the site to the offshore area located southeast of the site. Appendix D, Table 5, provides a generalized correlation of these units with respect to stratigraphy, lithology, and hydrologic properties. Review of geophysical logs obtained from the USGS of area wells confirms a structural downdip to the southeast of approximately 2 feet per mile in the above units.

The surficial aquifer ranges in thickness from approximately 6 to 90 feet bsl and consists of post-Miocene age unconsolidated fine-grained to very coarse-grained, well-sorted sand. Layers of poorly sorted sand, clayey silty sand, and, at depth, argillaceous limestone are interbedded with these well-sorted sand beds. The primary source of recharge to the surficial aquifer is infiltration from precipitation. Water levels in the surficial aquifer respond rapidly to rainfall. Seasonal variations correspond to variations in rainfall and evapotranspiration. Water levels may fluctuate seasonally by 15 to 20 feet in areas of high topographic relief and high permeability aquifer material. In flat-lying areas where low permeability material is present, seasonal fluctuations typically range less than 10 feet. The surficial aquifer functions as a source of recharge for the Floridan aquifer system by downward leakage through the secondary aquifer in areas where the water table in the surficial aquifer is above the potentiometric surface in the Floridan aquifer system. Where the head gradient between the surficial aquifer and the Floridan aquifer system is in the opposite direction, the surficial aquifer receives recharge from the Floridan aquifer system.

The upper confining unit, beginning at approximately 90 feet bsl, ranges from 380 feet to 530 feet thick. This confining unit separates the water table aquifer from the Floridan aquifer system and includes not only extremely low-permeability clay, but also moderately permeable sand beds. The confining unit is a regional formation, the Hawthorn Formation of late and middle Miocene age, present from north Florida to South Carolina. Over most of the region, the unit consists of middle Miocene age, interbedded sand, silt, clay, and low-permeability sandy clay beds. Groundwater yields in the confining unit are highly variable, and it is not considered a principal source of water (Krause and Randolph, 1989).

The Floridan aquifer system is composed of upper and lower permeable zones, termed the Upper Floridan and the Lower Floridan aquifers, respectively. This unit is used for drinking water, as it is of potable quality and provides sufficient yield. In southeast Georgia and northeast Florida, the Floridan

aquifer system contains cavities, cavernous zones, and solution channels 10s of feet in the vertical and horizontal dimensions. Primarily, these zones are found in the Upper Floridan, but the Lower Floridan contains some of the largest cavernous zones and solution channels in its Fernandina zone. Most of these zones are oriented horizontally, enhancing lateral permeabilities. However, some solution channels have formed along probable zones of weakness caused by high-angle, nearly vertical fractures and faults. In extreme southeast Georgia and northeast Florida, permeable zones within the entire Floridan aquifer system are locally connected by these nearly vertical conduits. Faults are believed to be present in the Floridan aquifer system along the coast in extreme southeast Georgia and northeast Florida; however, none were indicated on regional structure maps (Krause and Randolph, 1989).

The Upper Floridan aquifer consists primarily of late Eocene Ocala Limestone and equivalents. The Ocala is a very fossiliferous limestone having high effective porosity and permeability, especially the upper part. Migration of groundwater along bedding planes, joints, fractures, and other zones of weakness have developed secondary permeability that makes the Ocala extremely permeable. The Upper Floridan is composed of two permeable zones in the area of southeast Georgia. These units are designated the upper and lower water-bearing zones. The upper water-bearing zone ranges in thickness from 75 to 150 feet and consists of middle to late Eocene age limestone that is very fossiliferous and permeable. The lower water-bearing zone ranges in thickness from 15 to 110 feet and consists of middle to late Eocene age dolomitic limestone that is recrystallized and less permeable than the upper water-bearing zone.

Hydraulic characteristics of the Floridan aquifer system are primarily known for the Upper Floridan aquifer. Regional groundwater flow in the Upper Floridan is primarily easterly with southeasterly and northeasterly components as shown in Appendix A, Figure 15. Because of the aquifer's heterogeneity, transmissivity ranges from nearly zero near the aquifer's updip extent (east-central Georgia and southern South Carolina) to approximately 1 million feet squared per day in the thick carbonate sequence in southern Georgia. Because the Upper Floridan is so prolific, water supply wells generally do not tap other water-bearing units beneath the Upper Floridan (Krause and Randolph, 1989).

The Lower Floridan aquifer consists primarily of middle to lower Eocene carbonate rocks that are less fossiliferous and more dolomitic than the Upper Floridan aquifer. The permeability of the unit is primarily secondary, developed along bedding planes and other zones of weakness. In the southeastern Georgia area, the Lower Floridan aquifer includes a water-bearing zone designated the Fernandina permeable zone. The zone consists of Paleocene and late Cretaceous age recrystallized limestone and dolomite that is extremely permeable. The middle semi-confining unit, which lies between the Upper and Lower Floridan aquifers, consists of middle Eocene dense limestone and dolomite that is recrystallized and of low permeability.

**2.5.2 Site-Specific Hydrogeology** A conceptual model of the hydrogeologic setting at Site 2029 is discussed below. This model describes the generalized physical conditions of the site that may affect contaminant migration. Geologic and hydrogeologic information has been obtained from the following activities during the field investigation: collection of subsurface soil samples, installation of groundwater monitoring wells, and collection of groundwater samples. Estimates of hydraulic conductivity have been obtained from slug tests.

The water table aquifer consists mainly of layers of silty fine-grained sands interbedded with very fine-grained sands (Appendix E, Lithologic Logs). Sediments varied in color from reddish brown, grayish brown, brownish black, to black. Variations in lithology in each boring outside the tank berms are shown on soil boring logs in Appendix E, Lithologic Logs. The lithologic logs included in Appendix E are based on data collected from all soil borings outside the bermed area. Soil borings inside and outside the berm consisted primarily of fill material. Monitoring well and soil boring locations are shown in Appendix A, Figures 3 and 5, respectively. No strata have been identified that would act as a confining layer or barrier to contaminant migration.

The groundwater elevation maps (Appendix A, Figures 12 and 13) were prepared from groundwater elevations measured on December 16, 1993. The hydraulic gradient in the vicinity of Site 2029 slopes to the southeast. Groundwater flows laterally to the southeast and most likely ultimately discharges to surface water southeast of the site. Some localized variations in groundwater flow may exist.

Rising head slug tests were performed in monitoring wells NSB-2029-MW3 and NSB-2029-MW9 to estimate the hydraulic conductivity and to calculate other properties of the aquifer. Procedures for conducting slug tests, slug test graphical data, and slug test calculations are included in Appendix F, Aquifer Parameter Calculations and Data.

The estimated average hydraulic gradient, described previously, at the site is  $1.5 \times 10^{-3}$  ft/ft. Slug test results indicate hydraulic conductivity (K) of 4.16 feet/day (ft/day). The average pore water velocity (V) was  $2.50 \times 10^{-2}$  ft/day. Equations and calculations used to assess these values are presented in Appendix F, Aquifer Parameter Calculations and Data.

**2.5.3 Soil** Four soil types are recognized in the immediate vicinity of the NSB Kings Bay area, the Mandarin-Rutledge, Pottsburg-Cainhoy, Fripp-Duckston-Beaches, and the Bohicket-Capers soil (Soil Conservation Service, 1980). The site is located in the Mandarin-Rutledge soil type as shown in Appendix A, Figure 16. The Mandarin-Rutledge and Pottsburg-Cainhoy soil is associated with nearly level or gently sloping soil on ridges and flats and in depressions and drainageways. The Fripp-Duckston-Beaches soil is associated with level to rolling soil on dunes and flats and in depressions and nearly level beaches. The Bohicket-Capers soil is associated with level soil in tidal marshes.

Mandarin-Rutledge. The Mandarin soil is typically fine-grained sand, somewhat poorly drained, and found on ridges and flats. A very dark gray surface layer approximately 3 inches thick is underlain by a predominantly light gray layer extending to a depth of 19 inches. A weakly cemented organic hardpan extends below this to approximately 34 inches. The hardpan color is dark brown in the lower section, very dark brown in the middle section, and black in the upper section. Light gray, white, and grayish brown layers lie beneath the hardpan to a depth of 62 inches. A second weakly cemented black organic hardpan underlies these layers to a depth of 80 inches or more (Soil Conservation Service, 1980).

Rutledge soil is typically fine-grained sand, very poorly drained, and found in depressions and drainageways. A black surface layer approximately 15 inches thick is underlain by a layer that is light gray mottled with brownish gray in the upper section, light brownish gray in the middle section, and grayish brown

mottled with very dark grayish brown in the lower section. This layer extends to a depth of 70 inches or more (Soil Conservation Service, 1980).

This unit has a slope of mainly less than 1 percent and lies in the east-central and extreme western part of Camden County and on the coastal islands. Due to the high moisture content of the soil, it has poor potential for most uses except woodlands (Soil Conservation Service, 1980).

Pottsburg-Cainhoy. The Pottsburg soil is typically sand, somewhat poorly drained, and nearly level. A gray surface layer approximately 4 inches thick is underlain by a layer that is light gray with brownish yellow and brown mottles in the upper section and white with brownish yellow and dark grayish brown mottles in the lower section. This layer extends to a depth of 63 inches and is underlain by a weakly cemented dark brown organic hardpan that extends to a depth of 80 inches or more (Soil Conservation Service, 1980).

Cainhoy soil is typically fine-grained sand, somewhat excessively drained, and nearly level and gently sloping. A dark gray surface layer approximately 5 inches thick is underlain by a layer that is brownish yellow and extends to a depth of 23 inches. A very pale brown layer extends to a depth of 50 inches. Below this layer are light gray and white layers to a depth of 101 inches. Next, a black and dark reddish brown layer extends to a depth of 120 inches (Soil Conservation Service, 1980).

This unit has a slope of 5 percent or less and lies on Cumberland Island and in the extreme western part of Camden County. Community development and recreation are the main uses for this unit. Due to the wetness of the soil on the lower landscapes, potential is poor for urban uses. However, soil on the higher landscapes has good potential for most urban uses. The wetness of the lower landscape soil and the low available water capacity of the higher landscape soil are the main concerns for use and management of this map unit (Soil Conservation Service, 1980).

Fripp-Duckston-Beaches. The Fripp soil is typically fine-grained sand, excessively drained, and found on undulating and rolling dunes. A grayish brown surface layer approximately 6 inches thick is underlain by a layer that is pale brown in the upper section and white in the lower section. This layer extends to a depth of 80 inches (Soil Conservation Service, 1980).

Duckston soil is typically sand, poorly drained, and found in shallow depressions and on flats. A surface layer approximately 17 inches thick is grayish brown in the upper section and light brownish gray in the lower section. Below this surface layer is a predominantly light gray layer, greenish gray in the lower section, extending to a depth of 80 inches (Soil Conservation Service, 1980).

Beaches soil is found adjacent to the ocean and are typically fine-grained sand, sand, coarse-grained sand, and varying amounts of small shell fragments. This soil is covered twice daily by the tide (Soil Conservation Service, 1980).

This unit has a slope ranging from 0 to 20 percent and lies on Cumberland Island. Soil in some areas has been developed for dwellings and recreation. Beaches soil is too sandy for many wildlife and recreational uses. Because of flooding and wetness, potential is poor for most other uses (Soil Conservation Service, 1980).

Bohicket-Capers. The Bohicket soil is typically of very poorly drained soil that borders the ocean and is flooded twice daily by the tides. A dark silty clay loam approximately 8 inches thick is underlain by a dark greenish gray silty clay and clay to a depth of 65 inches or more. Grass fibrous roots are found throughout the soil (Soil Conservation Service, 1980).

Capers soil is typically very poorly drained, extends inland along creeks and rivers, and is flooded frequently by the tide. A surface layer of very dark gray silty clay approximately 8 inches thick is underlain by a very dark gray and dark gray clay to a depth of approximately 42 inches. Next is a greenish gray clay to a depth of 60 inches or more. Fine grass roots are found throughout the soil (Soil Conservation Service, 1980).

This unit has a slope of less than 1 percent and is found mainly along the Cumberland Sound and the Satilla River. Soil in some areas has been developed for farming; however, due to flooding, wetness, and natural sulfur content, they are primarily used by wetland wildlife (Soil Conservation Service, 1980).

### 3.0 LOCAL WATER RESOURCES

**3.1 WATER SUPPLY SYSTEMS.** The USGS, Georgia Department of Natural Resources (GA DNR), and the Camden County Health Department were contacted for information relating to locations of public and/or private water supply wells. Appendix D, Table 6, summarizes the information obtained. Approximate locations of the wells are shown on the attached Plat in Appendix G.

Groundwater pumped from the surficial aquifer is used primarily for irrigation. The public water supply for the NSB Kings Bay and surrounding towns and urban areas comes from the underlying Floridan aquifer system. In Camden County, water treatment facilities for St. Marys and Kingsland are adequate for present demands. Currently, the City of St. Marys is served by two water supply wells. One well is located on Jefferson Road near the NSB boundary (No. 48 on Plat 1, in Appendix G, approximately 2 miles from the site). The other well is located adjacent to the southern boundary of the St. Marys Airport (No. 49 on Plat 1, in Appendix G, approximately 2.5 miles from the site). Two additional wells are available on a standby basis. One is located near Mission Trace Drive in Mission Trace (No. 50 on Plat 1, in Appendix G, approximately 2 miles from the site). The other is located on Ready Street near City Hall (No. 51 on Plat 1, Appendix G, approximately 3 miles from the site). The city of Kingsland is served by two water supply wells located off South Grove Boulevard near Colony Pines (not within the Harriett's Bluff Quadrangle). These wells are approximately 6 miles west-southwest of NSB Kings Bay.

There are no private water supply wells for individual homes within 1 mile of Site 2029. NSB Kings Bay obtains its potable water from five groundwater wells, NSB1, NSB2, NSB4, NSB5, and NSB6, within its property boundaries (No. 12, 13, 14, 54, and 55 on Plat 1, Appendix G). NSB4 is  $\frac{1}{2}$  mile east of the site. NSB5 is approximately  $\frac{1}{2}$  mile southeast of the site. There are five private NSB Kings Bay wells within  $\frac{1}{2}$ -mile radius of the site. Two are unused, two are used for industrial purposes, and one is used for observation.

**3.2 SURFACE WATER USE.** There are no surface water bodies that drain the area of Site 2029. There are no surface water bodies that may be hydraulically connected with the dissolved contaminant plume (see Appendix G, Plat 1).

#### 4.0 CORRECTIVE ACTION COMPLETED OR IN PROGRESS

On March 5, 1993, contaminated soil was discovered during the repair of a valve in the drain line of Tank 2 (Appendix A, Figure 2). Further investigation revealed that the drain pipe had not been properly grouted into the catch basin wall during construction. The cracks in the basin wall around the drainpipe allowed diesel-contaminated effluent to leak and contaminate the surrounding soil and groundwater. The catch basin may have been leaking for as long a 4 years before the leak was detected. The leak was repaired and the drain line was pressure tested. No evidence of continuing leakage was detected. TRPH analyses of soil samples collected within the Tank 2 berm (collected and analyzed by the Navy) indicated contamination ranging from greater than 500 ppm to greater than 6,000 ppm in the leak area.

Visual inspection also indicated the presence of soil contamination near the oil-water separator. Leaking piping was identified as the source of the contamination and the piping was repaired by the Navy. Visually contaminated soil around the oil-water separator was excavated, drummed, and disposed. A total of 64 cubic feet of contaminated soil was removed. The excavation was filled with clean soil.

## 5.0 OBJECTIVES OF CORRECTIVE ACTION

This Corrective Action Plan (CAP) has been prepared and is being submitted to meet the requirements set forth in *The Requirements of Underground Storage Tank (UST) Release: Corrective Action Plan Content (GUST-7)* as published by the Georgia Environmental Protection Division (GEPD, 1993).

The contaminant concentrations that require corrective actions are stated in Chapter 391-3-25-0.09 of the rules of GEPD underground storage tank (UST) management. These rules state that at sites where a point of withdrawal for a private water supply system exists within  $\frac{1}{2}$  mile of the contaminant plume boundary, the owner or operator will remediate contamination that exceeds the following regulatory concentrations.

State and Federal groundwater MCLs are:

Benzene	0.005 ppm
Toluene	1.0 ppm
Ethylbenzene	0.7 ppm
Total xylenes	10.0 ppm
Benzo (a) pyrene	0.0002 ppm

State soil contamination standards are:

Total petroleum hydrocarbons (TPH)	100 ppm
Total BTEX	20 ppm

Groundwater contaminants equal to or in excess of any applicable Federal or State MCLs were not detected in any of the samples collected from groundwater monitoring wells or compliance wells located at Site 2029.

Each monitoring well was checked for the presence of free-floating petroleum product by visual observation of a groundwater sample taken from each well using a clear extruded Teflon™ bailer. Free product was not observed in any of the monitoring wells. Since no groundwater contaminants or free-floating petroleum product were detected in any of the groundwater samples collected from the monitoring wells, a groundwater monitoring plan is not being recommended for Site 2029. A groundwater monitoring plan will only be established and implemented should groundwater samples from the monitoring wells show free-floating petroleum product or groundwater contaminants equal or exceed Federal or State MCL.

Excessively contaminated soil was identified in borings SB-5, SB-15, SB-17, SB-18, SB-20, and SB-21. The areas of contaminated soil appears to be limited to a small area south of the oil-water separator and an area inside the southwest corner of the Tank 2 containment basin.

The contamination is located in an area that limits remedial alternatives. Many of these factors are unavoidable and their effects on remedial alternatives must be considered. The relatively high water table at the site reduces the vadose zone needed to extract vapors from voids in the soil by a soil vapor extraction system. The extent of petroleum contaminated soil is very limited in each of the areas and the vertical extent is not very deep.

The remedial actions should be no more than 6 feet to minimize any disruption of site activities. Engineering controls should be applied to control dust and debris from activities in proximity to Navy aircraft. General Navy regulations must be observed regarding security and obtaining security clearance.

**5.1 DISCUSSION OF ALTERNATIVES.** After defining the contaminants of concern, the applicable cleanup standards, the extent of contamination, and developing a remedial strategy, it is necessary to identify and screen technologies that may be applicable to mitigating the contamination at the site. Because cleanup technologies applicable to sites contaminated with petroleum substances are continually being improved and developed, it is important to develop remedial action alternatives using the most effective technologies available.

Generally, two possible approaches are available for soil remediation. These are *in-situ* and *ex-situ* alternatives. Descriptions follow.

**5.1.1 In-situ Soil Treatment** Two possible *in-situ* treatment alternatives are soil vapor extraction (SVE) and bioventing.

SVE systems may be used to remediate soil contamination in the vadose zone. This technology generally consists of "vacuuming" gases from the unsaturated zone through soil vapor extraction wells with vacuum pumps. Negative pressure induced by the vacuum draws gases through the soil pore spaces in the unsaturated zone. Vent wells may be used to facilitate the flow of atmospheric air into the soil to replace the extracted gases. Soil permeability and contaminant volatility are critical factors in the success of these systems. The extracted gases can be treated as necessary before discharge to the atmosphere. This treatment is typically provided by thermal oxidizers, catalytic oxidizers, or vapor phase granular activated carbon filter systems. The flow of atmospheric air through the soil induced by the system also enhances biological degradation of the hydrocarbons by supplying oxygen. SVE systems have been used at numerous locations to effectively remediate petroleum hydrocarbon soil contamination.

Bioventing accelerates naturally occurring biological degradation processes that are present in the soil by providing a continuous source of oxygen, typically from atmospheric air. In this process, low air flow rates are used to minimize volatilization of contaminants in the soil and maximize the biodegradation. Air can either be injected or extracted from the zones. If the latter is chosen, air is pulled from the surface into the contaminated zone. As in SVE, soil permeability is a critical factor in this system's success. Bioventing is best suited for less permeable and clay soils. Bioventing differs from SVE in the position where the contaminant is treated. Ideally, in the case of bioventing, the contaminant is degraded in the soil and does not volatilize into the atmosphere. In SVE, volatilization is necessary to transport the contaminant out of the soil where it is then treated by one of the previously mentioned mechanisms.

Due to the relatively high water table, the unsaturated zone required for "vacuuming" vapors from the soil is very limited. For this reason and others stated earlier, *in-situ* treatment is not considered practical and, therefore, will not be considered further.

**5.1.2 *Ex-situ* Soil Treatment** The only *ex-situ* technology under consideration is mechanical excavation. The use of conventional earth moving equipment such as bulldozers, scrapers, front end loaders, and backhoes to remove contaminated soil is an effective and proven technology. All contaminated soil as determined by TRPH analytical results would be excavated to the approximate depth of the water table. Removal of the soil would not only eliminate future human and environmental contact with the contaminants in the excavated areas, but would also prevent future migration of the contaminants from these areas. This technology would be used in conjunction with the application of treatment or disposal technologies to the contaminated excavated soil.

**5.2 ALTERNATIVE SELECTION.** Selections of effective remedial actions for the unsaturated zone are limited to *ex-situ* alternatives. The selected action for remediation of the soil contamination is by excavation and offsite incineration. This process will eliminate the problem quickly and allow future use of the site without concern that additional soil remediation may be necessary.

## 6.0 DESIGN AND OPERATION OF CORRECTIVE ACTION SYSTEM

The recommended remedial action for soil treatment at Site 2029 consists of excavating contaminated soil to the water table (but not less than 2 feet bbls inside the tank berm and not less than 4 feet bbls outside the tank berm), and soil treatment by offsite incineration. Excavated areas will be backfilled with clean fill.

**6.1 SOIL EXCAVATION.** The areas of excavation presented on Figure 10, Appendix A, are defined by the 100 ppm TRPH isocontour line. The excavation area near the catch basin is approximately 62 feet in length by 25 feet in width. The excavation area near the oil-water separator is approximately 45 feet in length by 25 feet in width. Soil will be excavated horizontally to the circumference where contaminant concentrations are below the cleanup criteria. The vertical extent of excavation is limited to the vadose zone extending from the land surface to the water table, or a depth of 4 feet bbls, whichever is greater. Assuming 2 feet to groundwater inside the tank berm and 4 feet to groundwater in the area associated with the oil-water separator, approximately 294 cubic yards (412 tons) of soil require excavation and treatment. A 12 percent swell factor has been applied to the estimated volume of soil to be excavated.

A minimum of two soil verification samples will be collected from each of the excavated areas to assess if all contaminated soil has been removed. Samples will also be collected in areas adjacent to where the tank meets the piping, beneath the flex connector or swing joint, or beneath the fill lines.

Stormwater runoff controls should be implemented to prevent offsite migration of sediment or contaminated stormwater during site activities. Dust control should also be implemented to prevent fugitive emissions during excavation and soil handling.

Existing structures, sidewalks, utilities, and other cultural features will be protected from excavation equipment. However, the soil contaminated area inside the tank berm that is covered by concrete, will require that the concrete be removed as part of the excavation. If excavated soil is stockpiled prior to disposal, it will be placed on an impermeable barrier installed to allow drainage of stormwater runoff to the excavation area. The contaminated soil stockpile will be covered as necessary to prevent infiltration of rain water.

**6.2 SOIL TREATMENT.** Offsite incineration of the soil will involve the transportation of the contaminated soil to a commercial incinerator, Kedesh, Inc. The commercial facility to be used should be a Georgia-permitted facility for incinerating petroleum-contaminated soil. The incineration process will be by rotary kiln.

Rotary kiln incineration has been proven effective in destroying hydrocarbon wastes and in meeting regulatory requirements. Because the kilns are refractory lined, they can operate at temperatures of 1,500 to 3,000 degrees Fahrenheit (°F). Residence times of solids can be easily adjusted by varying the speed of rotation to ensure complete destruction. There are no moving parts within the combustion zone, and the slope and rotation of the kiln provide good mixing of

combustion gases and solids. Tests have demonstrated that rotary kilns can achieve better than 99.9999 percent destruction of hydrocarbons. Disadvantages of the rotary kiln include possible leakage through the feed chute or kiln seals, relatively low thermal efficiency, and high capital cost.

Soil to be received by Kedesh, Inc., has to be analyzed prior to delivery. Pre-treatment soil will be analyzed for volatile organic aromatics, TRPH, and total metals. The estimated quantity of contaminated soil to be excavated is 294 cubic yards and, therefore, will require that three composite samples be collected from this site. Each composite soil sample will consist of soil samples collected from at least four locations. Each sample will be collected from locations equally distributed throughout the soil surface area and from a depth of at least 6 inches below the surface. These requirements and any additional requirements that Kedesh, Inc., may impose will be followed also.

The excavation contractor will remove standing water from the excavation during soil replacement. Soil and backfill materials will be blended to a uniform consistency when placed in the excavation and field compacted in place to surrounding conditions with earthmoving equipment tracks. Compaction and grading of the backfilled material will meet the standards necessary such that the original structures and cultural features are restored. The excavation contractor will smooth grades to original conditions and restore the site to its original condition.

## 7.0 IMPLEMENTATION

It is estimated that excavation can commence within 4 to 6 weeks of notification to the contractor. Preparation of any necessary construction plans or permit applications will begin immediately upon notice to proceed from the Navy.

## 8.0 REFERENCES

ABB Environmental Services, Inc. (ABB-ES), 1993, RCRA Facility Investigation Interim Report, Site 11, Naval Submarine Base, Kings Bay, Georgia: prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), August.

Bouwer, H., 1989, The Bouwer and Rice slug test, an update: *Groundwater*, vol. 127, p. 304-309.

Bouwer, H., and Rice, R.C., 1976, A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells: *Water Resources Research*, vol. 12, p. 423-428.

C.C. Johnson & Associates, Inc., 1985, Initial Assessment Study, Naval Energy & Environmental Support Activity, Naval Submarine Base, Kings Bay, Georgia: prepared for SOUTHNAVFACENGCOM, September.

Geraghty & Miller, Inc., 1989, AQTESOLV™, Aquifer Test Solver Software, Version 1.1: Geraghty & Miller Modeling Group, Reston, Virginia.

Georgia Department of Natural Resources (GDNR), 1993, Guidance Document Underground Storage Tank Release: Corrective Action Plan (CAP) Content, April.

Krause and Randolph, 1989, Hydrogeology of the Floridan Aquifer System in Southeast Georgia and adjacent parts of Florida and South Carolina: U.S. Geological Survey Professional Paper 1403D.

Soil Conservation Service, 1980, Soil Conservation Survey of Camden and Glynn Counties, Georgia: U.S. Department of Agriculture, November.

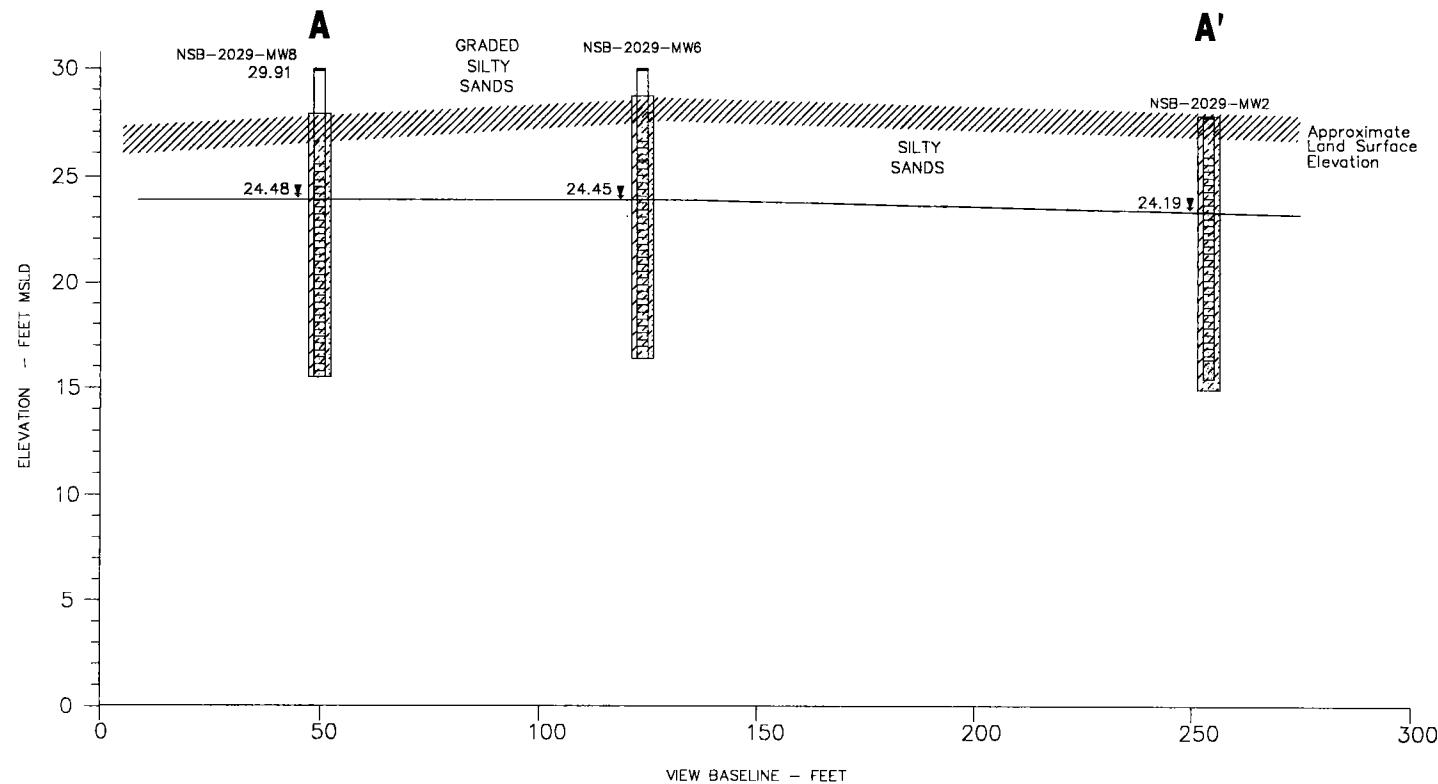
U.S. Geological Survey (USGS), 1989, Hydrogeology of the Floridan Aquifer System in Southeast Georgia and adjacent parts of Florida and South Carolina: Professional Paper 1403-D.

## **APPENDIX A**

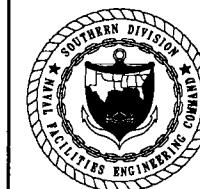
### **FIGURES**

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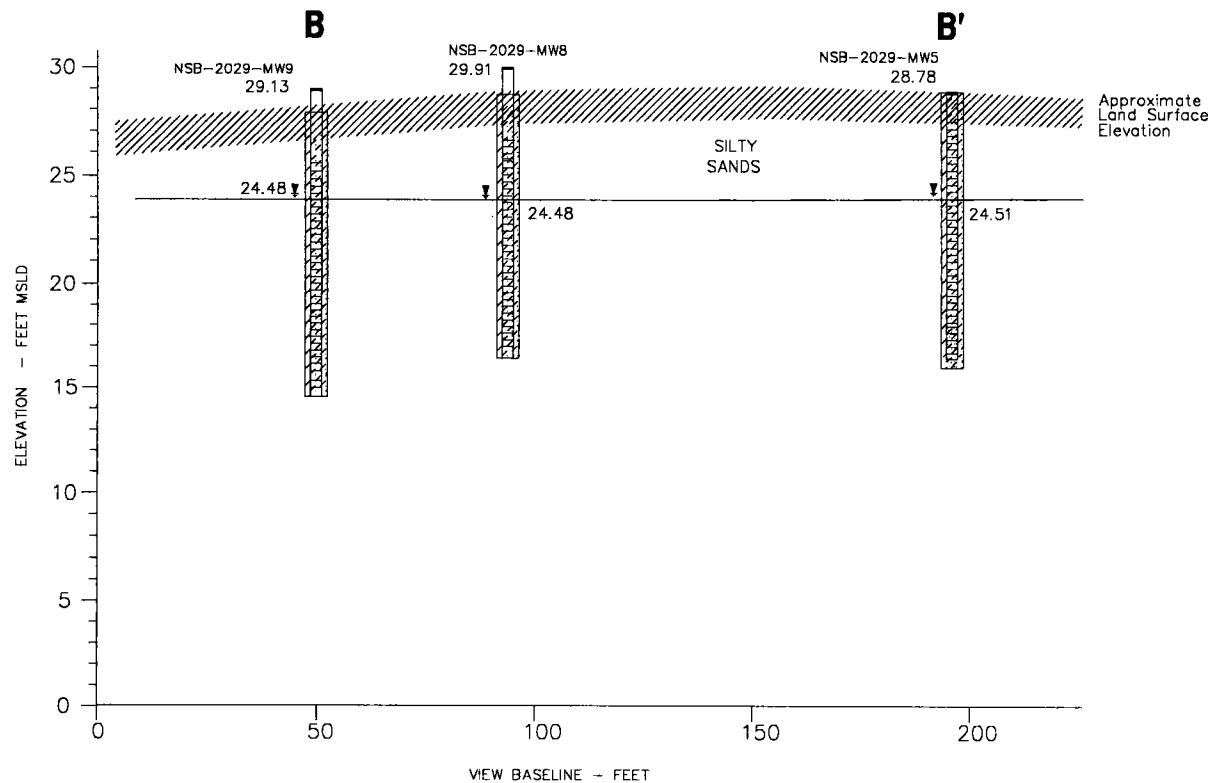
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**FIGURE 7**  
**STRATIGRAPHIC CROSS SECTION A-A'**  
**DOWN HYDRAULIC GRADIENT**

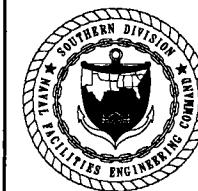


**CORRECTIVE ACTION PLAN**  
**SITE 2029**  
**NAVAL SUBMARINE BASE**  
**KINGS BAY, GEORGIA**



**FIGURE 8**  
**STRATIGRAPHIC CROSS SECTION B-B'**  
**PERPENDICULAR TO HYDRAULIC GRADIENT**

KINGSBAY\KBXSECT\NP\12-5-94



**CORRECTIVE ACTION PLAN  
SITE 2029**  
**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**

**APPENDIX B**

**INVESTIGATIVE METHODOLOGIES AND PROCEDURES**

### Subsurface Soil Collection

Soil samples were collected from outside the bermed tank area on December 1 and 2, 1993, and inside the Tank 2 berm on March 29, 1994.

Soil Samples were collected outside the berm using the Terraprobe™ system. The Terraprobe™ system's hydraulic probe has the capability to push and/or hammer 3/4-inch diameter rods and specialized probe tips into the subsurface for the collection of environmental samples. Discrete soil samples were collected from the subsurface using the Terraprobe™ system, which comprises a self-contained, hydraulically operated earth probe. The sample tube is initially driven to the desired depth by the hydraulic pushing and hammer action. Initially the soil probe is closed and does not allow soil to enter the tube until the sample depth is reached. After the sampling depth is reached a set of extension rods is removed from the probe rods connected to the piston stop. This allows the soil probe tip to move upward when the rods are driven farther into the soil. The probe is pushed or hammered into the soil, the tip remaining stationary and the soil probe filling with soil. The sample tube collects approximately 12 inches of soil when the probe tip is fully retracted into the probe. The rods are then removed from the hole and the soil core is extruded using a hydraulic extruder. These samples were typically collected at 2-foot intervals to the depth of the water table. The purpose of the soil collection was to delineate the horizontal and vertical extent of soil contamination and to optimize monitoring well placement, which was conducted in a separate phase.

Soil samples collected inside the Tank 2 berm were collected using manual hand auger techniques. The Terraprobe™ system could not be used due to inaccessibility. Soil sample locations coincided with previous sampling locations selected by the Navy. Expandable seals had been placed in the previously sampled locations to prevent leakage. These seals were removed and the hand auger was advanced to 6 inches above the desired sampling depth. A decontaminated auger was then used to collect the laboratory soil sample. Soil samples were removed from the hand auger with decontaminated stainless-steel spoons and placed directly into sampling jars. The purpose of collecting these soil samples was to confirm the result of the previously analyzed soil samples performed by the Navy.

### Monitoring Well Construction

All shallow monitoring wells were installed using a drill rig with hollow-stem augering capabilities. Deep monitoring wells were installed using a drill rig with mud rotary capabilities. All monitoring wells installed during the investigation were constructed of 2-inch inside diameter (ID), schedule 40, polyvinyl chloride (PVC) casing with flush-threaded joints and 0.010-inch machine-slotted screen. Shallow monitoring wells were constructed with 10 feet of screen. The deep monitoring well was constructed with 5 feet of screen. PVC well casing extends from the top of the screen to above land surface. A 20/30 grade silica sand filter pack was placed in the annular space to approximately 1 to 2.5 feet above the top of the screen. A 0.5- to 1-foot thick bentonite seal was then placed on top of the filter pack. Monitoring wells were installed with aboveground protective steel casings to protect the well riser. Protective steel casings were equipped with locking covers. A cement seal and cement pad were placed from the seal to the ground surface around each protective casing to secure the casing, prevent surface runoff from entering the borehole, and to

direct runoff away from the casing. Appendix A, Figure 17, depicts a typical shallow monitoring well construction diagram with an aboveground protective steel casing.

Each newly installed monitoring well was developed 24 hours after installation. Development consisted of the removal of a minimum of five well volumes with an air driven submersible pump.

Additional construction details for each monitoring well have been included in Appendix E, Lithologic Logs.

#### Water Level Measurements

Groundwater levels were measured using an electric water-level indicator and an engineering tape divided into increments of 0.01 foot. The wells were checked for the presence of free product by visual observation of the groundwater sample taken from each well using clear extruded Teflon™ bailers. Water level elevations were calculated by subtracting the measured depth to groundwater from the elevation at the top of the well casing.

#### Soil Sampling

All soil samples were collected in accordance with ABB Environmental Services, Inc. (ABB-ES), Comprehensive Quality Assurance Plan (CompQAP). Soil samples collected in December 1993 with the Terraprobe™ system were shipped to Environmental Science & Engineering, Inc. (ESE), Gainesville, Florida. Samples collected in March 1994 with manual augers were sent to Wadsworth/ALERT Laboratories, Tampa, Florida. All soil samples collected were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (USEPA) Method 8020 and total recoverable petroleum hydrocarbons (TRPH) by USEPA Method 9071/9073.

#### Groundwater Sampling

Groundwater samples were collected in accordance with the ABB-ES CompQAP. The monitoring wells were purged with a Teflon™ bailer. Purging continued until five well volumes had been removed. Groundwater samples were collected using an extruded Teflon™ bailer. Each sample was placed into its appropriate container and preserved as specified by the required sample analysis and as outlined in the ABB-ES CompQAP. All samples were appropriately packaged and placed on ice in coolers. The coolers were then sealed and shipped to Environmental Science & Engineering, Inc. (ESE), Gainesville, Florida. All groundwater samples collected during the contamination assessment (CA) were analyzed for BTEX by USEPA Method 602, polynuclear aromatic hydrocarbon (PAH) by USEPA Method 8310, and TRPH by USEPA Method 418.1.

#### Slug Tests Procedures

The slug test developed by Bouwer and Rice (1976) measures the saturated hydraulic conductivity (K) using a single well. The test method used is termed a "rising head" test and is performed by quickly withdrawing a volume of water (slug) from the well and measuring the subsequent rate of the rising water level in the well. Bouwer (1989) recommends the rising head slug test for wells with

screen intervals that are only partially submerged or only partially penetrate unconfined aquifers.

The slug was constructed of 1.6-inch outside diameter stainless-steel pipe, 2.8 feet in length with watertight caps at both ends. Water level changes in the monitoring wells were recorded using a data logger and pressure transducer. The pressure transducer was suspended less than 1 foot above the bottom of the well and an initial water level was recorded prior to beginning the test. The slug was then lowered into the well to a depth below the original water table. Water levels were then observed until they stabilized at the original level. The slug was then withdrawn from the well and the change in water level (rising head) was recorded at predetermined time intervals until the water level recovered to the original level. A minimum of three rising head tests were conducted for each well to obtain an average recovery response.

**APPENDIX C**  
**LABORATORY ANALYTICAL DATA**

**GROUNDWATER ANALYTICAL RESULTS  
DECEMBER 17, 1993**

**SOIL ANALYTICAL RESULTS  
DECEMBER 1 AND 2, 1993**

**SOIL ANALYTICAL RESULTS  
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## **APPENDIX D**

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**Table 1**  
**Summary of Groundwater Sample Analytical Results,**  
**December 17, 1993**

Corrective Action Plan  
 Site 2029, Naval Submarine Base  
 Kings Bay, Georgia

Compound	MW1	MW2	MW3	MW4	MW5	MW6	MW7	MW8	DUP <sup>1</sup>	MW9
<b>USEPA Method 602, ppm</b>										
Benzene	<.001	<.001	<.001	<.001	<.001	.00198	<.001	.00127	.00131	<.001
Toluene	<.001	<.001	<.001	<.001	<.001	<.001	<.001	.00153	.00166	<.001
Ethylbenzene	<.001	<.001	<.001	<.001	<.001	.00150	<.001	.00105	.00110	<.001
Xylenes	<.001	<.001	<.001	<.001	<.001	.00170	<.001	.00668	.00647	<.001
Methyl tert-butyl ether	<.001	<.001	<.001	.00136	<.001	<.001	.00580	.00172	.00172	<.001
<b>USEPA Method 610, ppb</b>										
Acenaphthalene	<1.47	<1.47	<1.47	6.70	<1.47	<1.47	<1.47	2.56	2.48	<1.47
Anthracene	<.089	<.089	0.159	2.00	<.089	0.140	0.490	<.089	<.089	0.525
Benzo(a)anthracene	<.002	<.002	0.010	0.096	<.002	0.022	0.048	<.002	0.004	0.049
Benzo(a)pyrene	<.001	<.001	0.005	0.028	<.001	0.002	<.001	<.001	<.001	0.011
Benzo(b)fluoranthene	0.007	0.003	0.017	0.063	<.001	0.029	0.079	0.003	0.005	0.108
Benzo(g,h,i)perylene	<.004	<.004	<.004	0.157	<.004	0.041	0.129	0.012	0.034	0.040
Benzo(k)fluoranthene	<.0004	.0008	0.002	0.025	<.0004	0.002	0.008	.0009	0.002	0.011
Chrysene	<.031	<.031	<.031	0.537	<.031	0.060	0.165	<.031	0.247	0.355
Dibenzo(a,h)anthracene	<.003	<.003	<.003	0.170	<.003	0.003	0.016	<.003	<.003	0.009
Fluoranthene	0.007	0.008	0.011	0.047	0.004	0.026	0.147	0.006	0.008	0.126
Fluorene	<.247	<.247	1.43	1.31	<.247	0.806	0.372	1.21	1.36	1.09
Indeno(1,2,3-cd)pyrene	<.003	<.003	<.003	0.084	<.003	0.019	0.072	<.003	0.010	0.030
Phenanthrene	0.092	0.080	0.324	2.84	<.065	0.962	1.44	<.065	<.065	0.538
Pyrene	0.425	<.026	1.19	2.28	<.026	2.93	5.15	0.383	0.645	4.96
Naphthalene	<.917	<.917	<.917	1.01	<.917	5.83	2.70	6.31	6.29	<.917
1-Methylnaphthalene	<1.24	<1.24	<1.24	2.72	<1.24	1.55	<1.24	<1.24	<1.24	<1.24
2-Methylnaphthalene	<1.20	<1.20	<1.20	2.97	<1.20	1.68	<1.20	<1.20	<1.20	<1.20
Total PAH	0.531	0.0918	3.148	23.037	0.004	14.102	10.816	10.485	11.085	7.852
<b>USEPA Method 418.1, ppm</b>										
TRPH	<0.18	0.32	<0.19	<0.19	<0.18	<0.19	<0.18	<0.18	<0.18	<0.19

<sup>1</sup>The duplicate sample, designated DUP, was taken from MW8.

Notes: USEPA = U.S. Environmental Protection Agency.

ppm = parts per million.

ppb = parts per billion.

Total PAH - the sum concentration of polynuclear aromatic hydrocarbons.

TRPH = total recoverable petroleum hydrocarbons.

**Table 2**  
**Summary of Soil Sample Analytical Results,**  
**December 1 and 2, 1993**

Corrective Action Plan  
 Site 2029, Naval Submarine Base  
 Kings Bay, Georgia

Compound	SB1 2-4' bls	SB1 5-7' bls	SB2 2-4' bls	SB3 2-4' bls	SB4 2-4' bls	SB5 2-4' bls	SB6 2-4' bls	<sup>1</sup> DUP1	SB7 2-4' bls	SB7 4-6' bls
<b>USEPA Method 8020, ppm</b>										
Benzene	<.115	<.122	<.121	<.133	<.123	<.123	<.116	<.115	<.114	<.118
Toluene	<.115	<.122	<.121	<.133	<.123	<.123	<.116	<.115	<.114	<.118
Ethylbenzene	<.115	<.122	<.121	<.133	<.123	<.123	<.116	<.115	<.114	<.118
Xylenes	<.115	<.122	<.121	<.133	<.123	<.123	<.116	<.115	<.114	<.118
Total BTEX	<.460	<.488	<.484	<.532	<.492	<.492	<.464	<.460	<.456	<.472
<b>USEPA Method 418.1, ppm</b>										
TRPH	<32.8	<34.5	<34.3	<38.1	<24.8	1110	<33.1	46.5	<32.2	<33.5
Compound	SB8 2-4' bls	SB8 4-6' bls	SB9 2-4' bls	SB10 2-4' bls	SB11 2-4' bls	<sup>2</sup> DUP2	<sup>3</sup> SB12 2-4' bls	SB13 2-4' bls	SB14 2-4' bls	SB14 4-6' bls
<b>USEPA Method 8020, ppm</b>										
Benzene	<.120	<.122	<.113	<.120	<.125	<.122	<.114	<.116	<.117	<.121
Toluene	<.120	<.122	<.113	<.120	<.125	<.122	<.114	<.116	<.117	<.121
Ethylbenzene	<.120	<.122	<.113	<.120	<.125	<.122	<.114	<.116	<.117	<.121
Xylenes	<.120	<.122	<.113	<.120	<.125	<.122	<.114	<.116	<.117	<.121
Total BTEX	<.480	<.488	<.452	<.480	<.500	<.488	<.456	<.464	<.168	<.484
<b>USEPA Method 418.1, ppm</b>										
TRPH	<34.0	<35.0	<32.1	60.5	50.8	<34.6	<32.2	<33.1	36.3	49.4

<sup>1</sup>Duplicate sample one, designated DUP1, was taken from SB6.

<sup>2</sup>Duplicate sample two, designated DUP2, was taken from SB11.

<sup>3</sup>The sample SB12 is mislabeled in the laboratory data sheets as DUP2-2.

Notes: bls = below land surface.

U.S. Environmental Protection Agency.

ppm = parts per million.

Total BTEX = the sum concentration of benzene, toluene, ethylbenzene, and xylenes.

TRPH = total recoverable petroleum hydrocarbons.

**Table 3**  
**Summary of Soil Sample Analytical Results,**  
**March 29, 1993**

Corrective Action Plan Site 2029, Naval Submarine Base Kings Bay, Georgia								
Compound	SB15 1' bls	SB16 1.5' bls	SB17 1.5' bls	SB18 1' bls	SB19 1' bls	SB20 1' bls	SB21 1' bls	SB21 DUP
<b>USEPA Method 8020, ppm</b>								
Benzene	<0.006	<0.006	<0.006	<0.15	<0.006	<0.006	<0.14	<0.14
Toluene	<0.006	<0.006	<0.006	0.16	<0.006	<0.006	0.16	0.19
Ethylbenzene	0.028	<0.006	<0.006	1.20	<0.006	<0.006	2.70	3.00
Xylenes	0.023	<0.006	<0.006	5.70	<0.006	<0.006	12.0	15.0
Total BTEX	0.051N	<0.024	<0.024	7.06N	<0.024	<0.024	14.86N	18.19N
<b>USEPA Method 418.1, ppm</b>								
TRPH	1580	57.4	122	20900	34.4	10300	33200	44600
Compound	SB22 1' bls	SB23 1' bls	SB24 1' bls	SB25 1' bls	SB26 1' bls	SB27 1' bls	SB28 1' bls	
<b>USEPA Method 8020, ppm</b>								
Benzene	<0.007	<0.006	<0.007	<0.007	<0.007	<0.007	<0.006	
Toluene	<0.007	<0.006	<0.007	<0.007	<0.007	<0.007	<0.006	
Ethylbenzene	<0.007	<0.006	<0.007	<0.007	<0.007	<0.007	<0.006	
Xylenes	<0.007	<0.006	<0.007	<0.007	<0.007	<0.007	<0.006	
Total BTEX	<0.028	<0.024	<0.028	<0.028	<0.028	<0.028	<0.024	
<b>USEPA Method 418.1, ppm</b>								
TRPH	<6.5	67.2	<7.4	44.9	15.6	17.3	25.4	
Notes: bls = below land surface. DUP = duplicate sample. USEPA = U.S. Environmental Protection Agency. Total BTEX = the sum concentration of benzene, toluene, ethylbenzene, and xylenes. N = actual value may be greater than the reported value. TRPH = total recoverable petroleum hydrocarbons.								

**Table 4**  
**Monitoring Well and Survey Data**

Corrective Action Plan  
Site 2029, Naval Submarine Base  
Kings Bay, Florida

Well Number	Total Depth	Screened Interval	Top of Casing Elevation	December 16, 1993	
				Depth to Water	Groundwater Elevation
MW1	11.65	1.2 to 11.2	27.81	3.35	24.46
MW2	12.00	1.5 to 11.5	26.89	2.70	24.19
MW3	12.46	2.0 to 12.0	27.49	3.18	24.31
MW4	12.53	2.0 to 12.0	27.37	2.82	24.55
MW5	12.56	2.1 to 12.1	28.78	4.27	24.51
MW6	12.25	1.8 to 11.8	28.78	4.33	24.45
MW7	12.35	1.8 to 11.8	27.81	3.40	24.41
MW8	14.20	3.7 to 13.7	29.91	5.43	24.48
MW9	14.30	3.8 to 13.8	29.13	4.65	24.48

Notes: All measurements recorded in feet.  
A 6-inch sump was installed with each well.

**Table 5**  
**Generalized Correlation of Stratigraphic Units, Lithology, and Hydrologic Properties**  
**of Formation Pertinent to the Floridan Aquifer System**

Corrective Action Plan  
Site 2029, Naval Submarine Base  
Kings Bay, Georgia

System	Series	Gulf Coast Stage	Northeast Florida and Extreme Southeast Georgia		
			Stratigraphic Unit	Lithology	Hydrostratigraphic Graphic Unit/Hydrologic properties
Quaternary	Holocene and Pleistocene		Alluvium and terrace deposits	Chiefly sand, gravel, clay, shells, limestone, and marl.	Surficial Aquifer - low to moderate yields.
Tertiary	Pliocene		Charlton Formation	Shells, sand, and marl.	Surficial Aquifer - low to moderate yields.
	Miocene		Hawthorn Formation	Chiefly interbedded sand, clay, and dolomite, and sandy phosphatic dolomite and marl.	Upper Confining Unit - low to moderate amounts of artesian and nonartesian water. Most of the Hawthorn forms the upper confining unit for the underlying artesian water, but in places, the lower part may be hydraulically connected to the Upper Floridan aquifer.
	Oligocene	Chickasawhayan	Suwannee Limestone	Limestone ranging from soft, chalky, and fossiliferous to dense, calcified, saccharoidal, and unfossiliferous, containing many solution cavities in recharge area.	Upper Floridan - yields moderate to large amounts of water, but generally less than underlying Eocene formations. Uppermost unit of the Floridan aquifer system.
	Upper Eocene	Jacksonian	Ocala Limestone	White to gray, fossiliferous, recrystallized, porous limestone containing large solution cavities and caves in recharge areas as well as at depth downgradient.	Upper Floridan - prolific aquifer; yields as much as 7,500 gallons per minute from two distinct water-bearing zones near the top and base of the formation.
Tertiary	Middle Eocene	Claibornian	Avon Park Formation	Cream-colored to brown, chalky to well indurated, pelletal to micritic limestone interbedded with cream-colored to dark-brown, fine to medium crystalline, slightly vuggy dolomite.	Middle Confining Unit/Lower Floridan - not a significant contributor to the Floridan aquifer system in southeast Georgia. Yields moderate to large amounts of water in northeast Florida where the dolomite contains secondary permeability solution cavities.
	Lower Eocene	Sabinian	Oldsmar Formation	Off-white to light gray micritic limestone, interbedded with gray to light-brown, fine to medium crystalline, commonly vuggy dolomite. In places, contains pore-filling gypsum and thin beds of anhydrite.	Lower Floridan - upper part acts as a semiconfining bed to basal part, which yields large amounts of water.
	Paleocene	Midwayan	Cedar Keys Formation	Gray and cream-colored, dolomitized limestone containing gypsum and anhydrite stringers, to finely crystalline dolomite and anhydrite.	Fernandina Zone - extremely low permeability. Acts as the lower confining unit of the Floridan aquifer system except where permeable in the Brunswick, Ga., area, where it is part of the Lower Floridan aquifer. Contains mineralized water there.
Cretaceous	Upper	Navarroan	Lawson Limestone	Light-tan to orange, recrystallized, sandy, porous dolostone and calcarenite.	Fernandina Zone - low permeability. Extremely high permeability locally in the Brunswick, Georgia, area where it is part of the Lower Floridan aquifer. Contains highly mineralized water there.
	Tayloran	Undifferentiated		White to cream-colored, argillaceous, soft, chalky limestone to hard, gray, shaly marl.	Low permeability. Locally acts as the lower confining unit of the Floridan aquifer system in the Brunswick, Georgia, area.

Source: Modified, Krause and Randolph, 1989.

**Table 6**  
**Summary of Water Supply Well Data**

Corrective Action Plan  
Site 2029, Naval Submarine Base  
Kings Bay, Florida

Map Number <sup>1</sup>	Latitude	Longitude	Casing Depth	Well Depth	Station Name <sup>2</sup>	Well Use
1	30°46'27"	81°37'12"	80	474	Rayonier, Inc.	Unused
2	30°47'51"	81°32'01"	302	--	NSB Refill Station	Unused
3	30°49'10"	81°32'38"	186	516	NSB Etowah	Recreational
4	30°52'08"	81°35'03"	--	650	W. Bailey	--
5	30°46'08"	81°34'52"	--	750	Finn & Neighbor	--
6	30°45'10"	81°34'38"	525	770	G. H. Davis	Domestic
7	30°50'37"	81°33'23"	261	470	Crooked River State Park	Unused
8	30°50'45"	81°33'46"	250	656	American Legion	--
9	30°48'00"	81°31'05"	145	486	NSB Club	Unused
10	30°50'31"	81°34'27"	450	650	R. Norieka	Domestic
11	30°47'56"	81°31'11"	555	990	NSB TW1	Observational
12	30°47'39"	81°34'31"	585	894	NSB 1	Raw Water Supply
13	30°47'43"	81°33'42"	585	813	NSB 2	Raw Water Supply
14	30°47'52"	81°31'12"	500	810	NSB 4	Raw Water Supply
15	30°47'59"	81°31'19"	500	800	NSB 3	Fire Fighting
16	30°49'13"	81°35'31"	--	575	C. Drury, Laurel Island	Unused
17	30°51'57"	81°31'56"	66	340	Brunswick Pulp and Paper	Unused
18	30°47'49"	81°33'53"	100/560/ 950	1150	NSB Observ. No. 1	Observational
19	30°47'49"	81°33'53"	100	750	NSB Observ. No. 2	Observational
20	30°49'16"	81°36'07"	245	650	Joiner/Greene/Crocker/O'Neil	Domestic
21	30°45'15"	81°36'57"	87	111	Osprey Cove Golf Course	Institutional
22	30°45'15"	81°36'57"	334	502	Osprey Cove Golf Course	Institutional
23	30°49'42"	81°34'12"	--	45	Private Residence	Domestic
24	30°49'45"	81°34'06"	--	45	Private Residence	Domestic
25	30°52'13"	81°36'57"	--	~200	Sadler Cove (39)	--
26	30°52'06"	81°37'04"	--	~200	Mallard Pointe (112)	--
27	30°52'27"	81°36'49"	--	~200	Sadler Creek (112)	--
28	30°50'29"	81°36'29"	--	~200	London Hill (16)	--
29	30°52'16"	81°35'04"	--	~200	Harriett's Bluff (6)	--
30	30°50'35"	81°34'17"	--	~125	Timber Ridge (5)	--

See notes at end of table.

**Table 6 (Continued)**  
**Summary of Water Supply Well Data**

Corrective Action Plan  
Site 2029, Naval Submarine Base  
Kings Bay, Florida

Map Number <sup>1</sup>	Latitude	Longitude	Casing Depth	Well Depth	Station Name <sup>2</sup>	Well Use
31	30°50'22"	81°34'31"	--	~125	Elliott's Plantation	--
32	30°50'30"	81°34'22"	--	~125	Riverbend (3)	--
33	30°50'39"	81°34'19"	--	~125	Marsh Point	--
34	30°50'23"	81°34'09"	--	~125	Foxwood (40)	--
35	30°45'36"	81°34'43"	--	~60	Gaines Davis (7)	--
36	30°45'57"	81°34'48"	--	~60	New Hope Baptist Church	--
37	30°45'39"	81°36'06"	--	~60	Woodsville	--
38	30°45'02"	81°34'25"	--	~60	Bank South	--
39	30°45'10"	81°35'10"	--	~60	Shadowlawn (4)	--
40	30°45'29"	81°31'26"	--	~85	N. River Oaks (9)	--
41	30°45'25"	81°31'21"	--	~85	Highland Oaks (23)	--
42	30°45'22"	81°31'31"	--	~85	River Oaks (24)	--
43	30°45'13"	81°31'35"	--	~85	Chaney's MHP (2)	--
44	30°45'10"	81°31'22"	--	~85	Pagan Street	--
45	30°44'50"	81°31'25"	--	~85	Marchi Drive	--
46	30°44'39"	81°31'28"	--	~85	Lonsome Pine Rd.	--
47	30°45'21"	81°31'20"	--	~85	Palmetto Street	--
48	30°47'14"	81°35'17"	--	--	City of St. Marys	Public Supply
49	30°45'01"	81°33'45"	--	--	City of St. Marys	Public Supply
50	30°45'52"	81°34'25"	--	--	City of St. Marys	Standby Public Supply
51	30°44'24"	81°33'02"	--	--	City of St. Marys	Standby Public Supply
52	30°45'00"	81°31'24"	--	--	Point Peter	--
53	30°50'07"	81°34'18"	--	--	Unnamed	--
54	30°47'58"	81°32'45"	--	--	NSB 6	Raw Water Supply
55	30° <sup>m</sup>	81° <sup>m</sup>	--	--	NSB 5	Raw Water Supply

<sup>1</sup>Map number corresponds to the location identified in Appendix G, Plat 1.

<sup>2</sup>Number in parentheses indicates the total number of supply wells in the area of the station.

Note: Shaded water wells are within a 3-mile radius of Site 2029. All others located outside the 3-mile radius.

**APPENDIX E**  
**LITHOLOGIC LOGS**

**APPENDIX F**  
**AQUIFER PARAMETER CALCULATIONS AND DATA**

## Aquifer Parameter Calculations

### Hydraulic Gradient

Water-table elevations were plotted on a map of the site. A water-table contour map was drawn with flow lines (depicting groundwater flow direction) perpendicular to the groundwater elevation contours. The average groundwater hydraulic gradient was calculated by subtracting the differences in groundwater elevation (in feet) between two points on the map and dividing the elevation difference by the distance between the two points to obtain a resulting gradient in feet per foot. Water elevation data collected on December 16, 1993, were used to calculate hydraulic gradients at the site. Two traverses were made perpendicular to equipotential contour lines to calculate an average site hydraulic gradient. For each traverse, the hydraulic gradient was calculated as follows:

$$i = \frac{(h_1 - h_2)}{d}$$

where

- i = hydraulic gradient (feet per foot [ft/ft]),
- $h_1$  = water-table elevation, upgradient (feet)
- $h_2$  = water-table elevation, downgradient (feet), and
- d = horizontal distance (feet) between  $h_1$  and  $h_2$  along a flow line.

Hydraulic gradients calculated in this manner varied from  $1.71 \times 10^{-3}$  ft/ft to  $1.3 \times 10^{-3}$  ft/ft. The average hydraulic gradient at the site was calculated to be  $1.5 \times 10^{-3}$  ft/ft.

### Hydraulic Conductivity

Hydraulic conductivity from slug test data was calculated following the methods of Bouwer and Rice (1976) and Bouwer (1989) for partially penetrating wells screened in unconfined aquifers. The following well information was needed to assess the hydraulic conductivity:

- radius of well casing ( $r_c$ ),
- $r_w$  = radius of borehole ( $r_c$  plus radius of the sand pack surrounding the well screen ),
- length of screened interval below the water table ( $L_e$ ),
- effective well radius ( $r_e$ ),
- depth of well below the water table ( $L_w$ ),
- depth to confining unit or bottom of aquifer below the static water table (H), and
- plot of time versus the logarithm of y, where y is the difference between the static water level outside the well and the water level inside the well.

Appendix A, Figure 18 is a well diagram depicting most of the aquifer and well parameters. Calculations were made assuming that  $L_w < H$ . Hydraulic conductivity, K, was calculated as follows:

$$K = [R_c^2 \ln(\frac{r_e}{r_w}) - 2L_e] [\frac{1}{t} \ln(\frac{y_o}{y_t})]$$

where

$y_o$  = y at time zero, and

$y_t$  = y at time t.

The effective well radius,  $r_e$ , and the term  $[(1/t)\ln(y_o/y_t)]$  were derived by using the computer program AQTESOLV<sup>M</sup> (Geraghty & Miller, Inc., 1989). This computer program follows procedures and assumptions outlined by Bouwer (1989).

Slug test graphs and a summary table are attached at the end of this section. Values of y were calculated for a particular time, t, and plotted on the graph. The computer program selects a "best-fit" line through the data points by linear regression along a "straight-line" portion of the graph. The slope of the "best-fit" line is used to calculate the hydraulic conductivity, K.

Three slug tests were performed inside wells NSB-3022-MW3 and four tests were performed inside well NSB-3022-MW9. Hydraulic conductivity, K, is reported in feet per minute (ft/min) on the slug test graphs, and was recalculated to feet per day (ft/day). K was found to vary from 2.06 ft/day to 6.13 ft/day with an average K of 4.16 ft/day.

#### Average Pore Water Velocity

Estimates of average pore water velocity were obtained using the following formula:

$$V = \frac{(K * i)}{n}$$

where

V = seepage velocity in ft/day

K = hydraulic conductivity in ft/day

i = hydraulic gradient, and

n = estimated porosity.

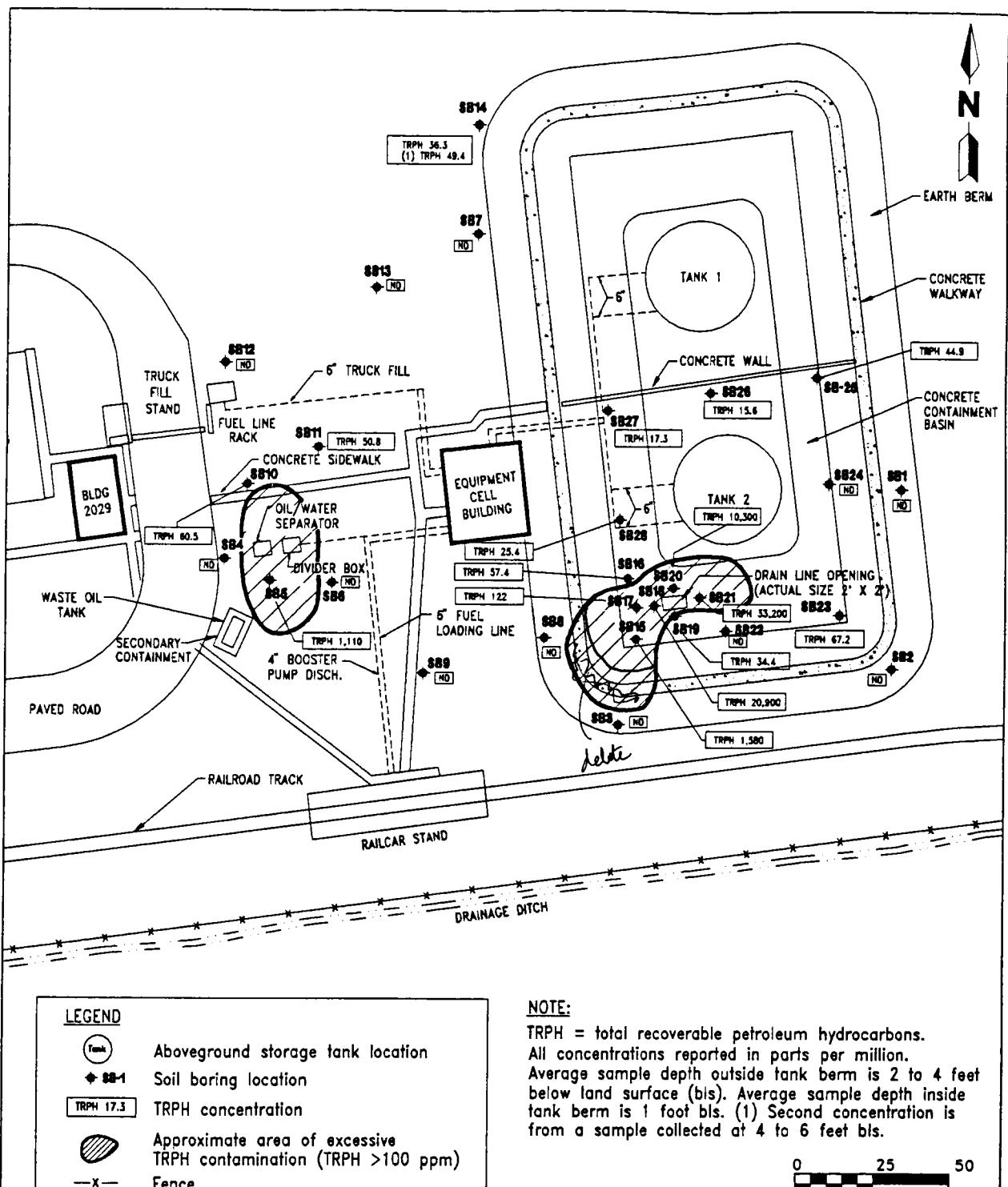
Assuming an estimated porosity of 25 percent, an average hydraulic gradient of  $1.5 \times 10^{-3}$  ft/ft, and an average hydraulic conductivity of 4.16 ft/day, the average pore water velocity is calculated as follows:

$$V = \frac{1.5 \times 10^{-3} \text{ ft/ft} \times 4.16 \text{ ft/day}}{0.25}$$

$$V = 2.50 \times 10^{-2} \text{ ft/day}$$

## **SLUG TEST PLOTS**

**APPENDIX G**  
**PUBLIC WATER SUPPLY WELLS MAP**



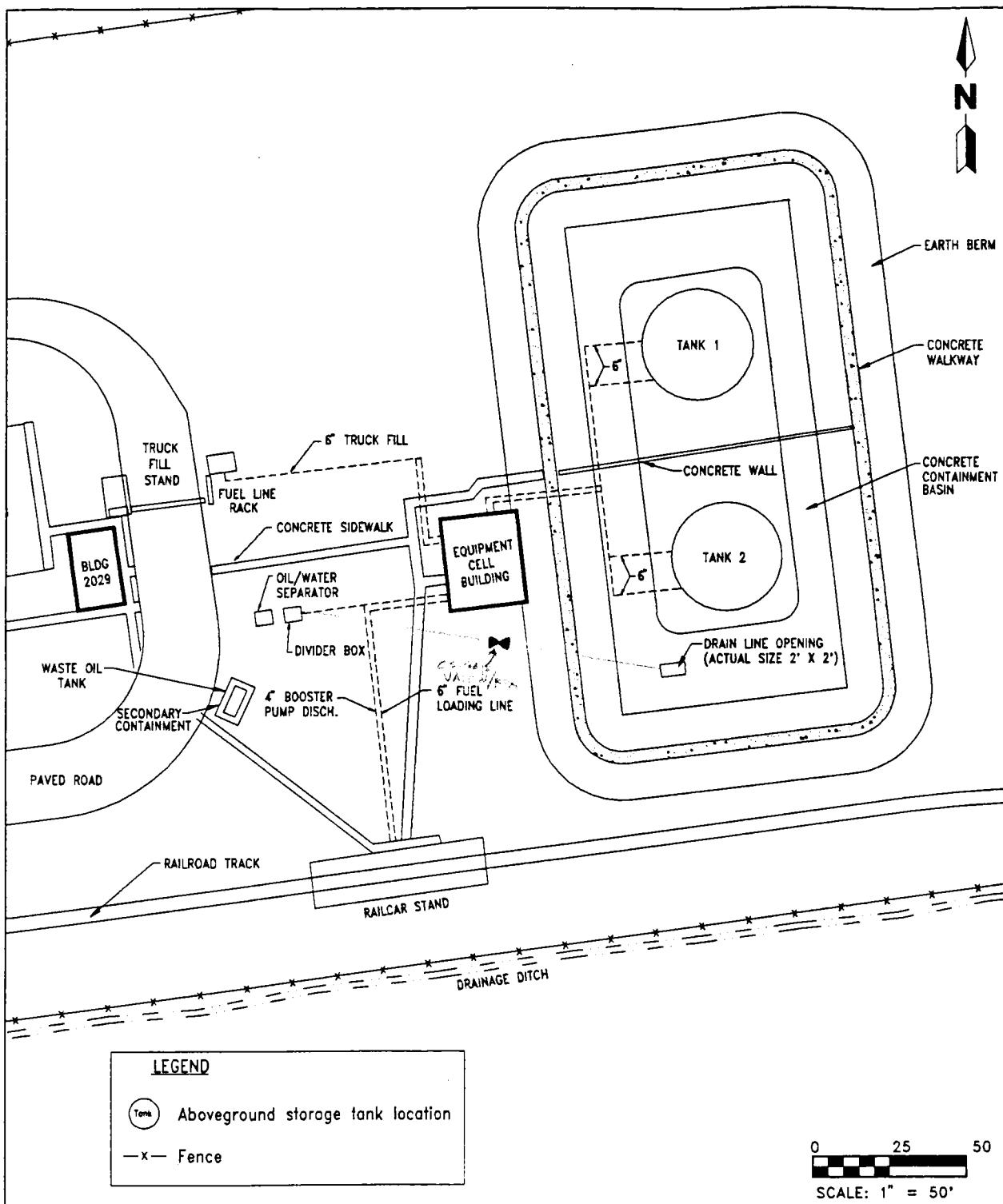
**FIGURE 7**  
**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH) DISTRIBUTION IN SOIL, DECEMBER 1993 AND MARCH 1994**

H:/KINGSBAY/SITE2029/KCP-WDW-NP/08-04-94



**CORRECTIVE ACTION PLAN  
SITE 2029**

**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**



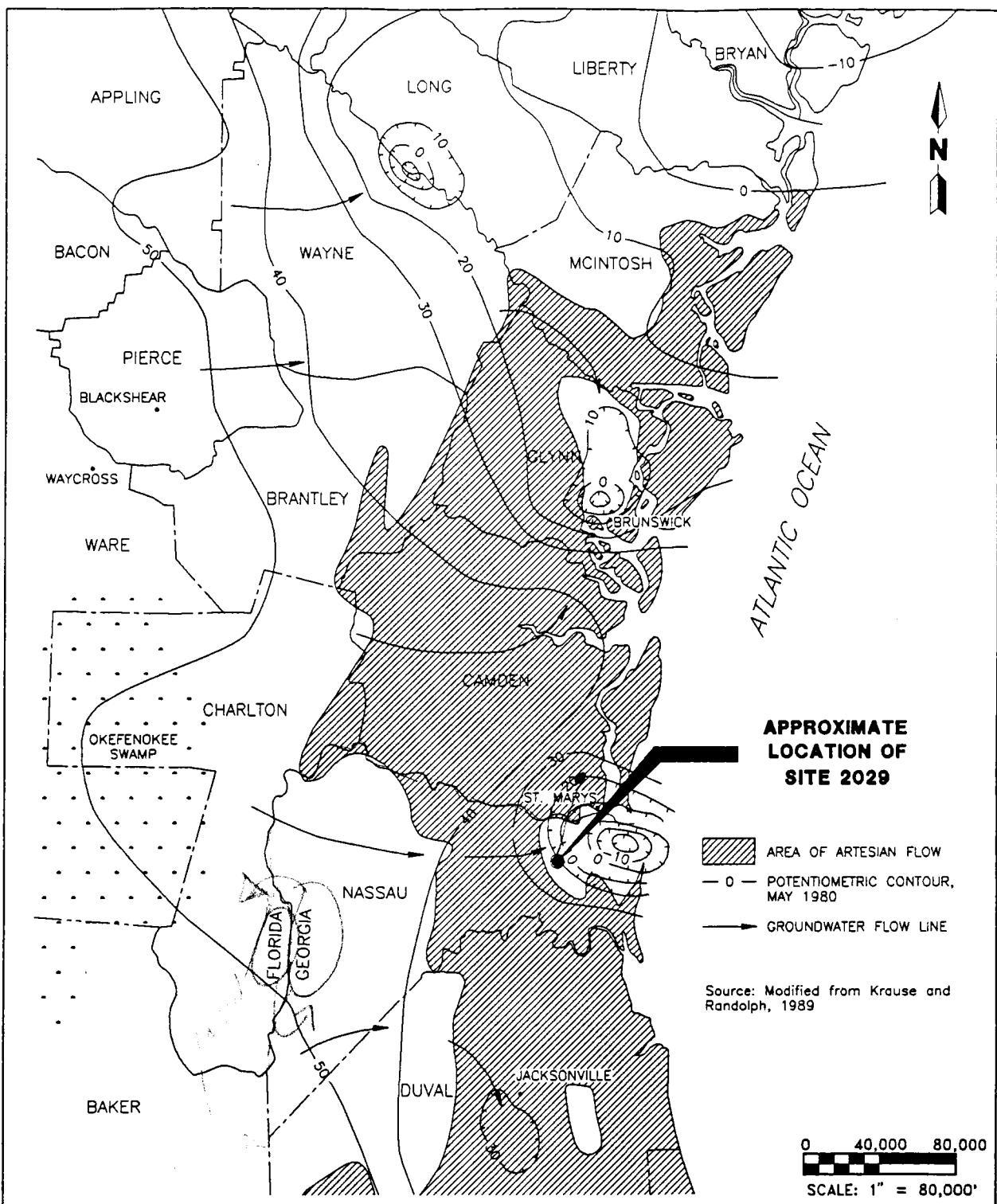
**FIGURE 2**  
**SITE PLAN**

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**CORRECTIVE ACTION PLAN**  
**SITE 2029**

**NAVAL SUBMARINE BASE**  
**KINGS BAY, GEORGIA**



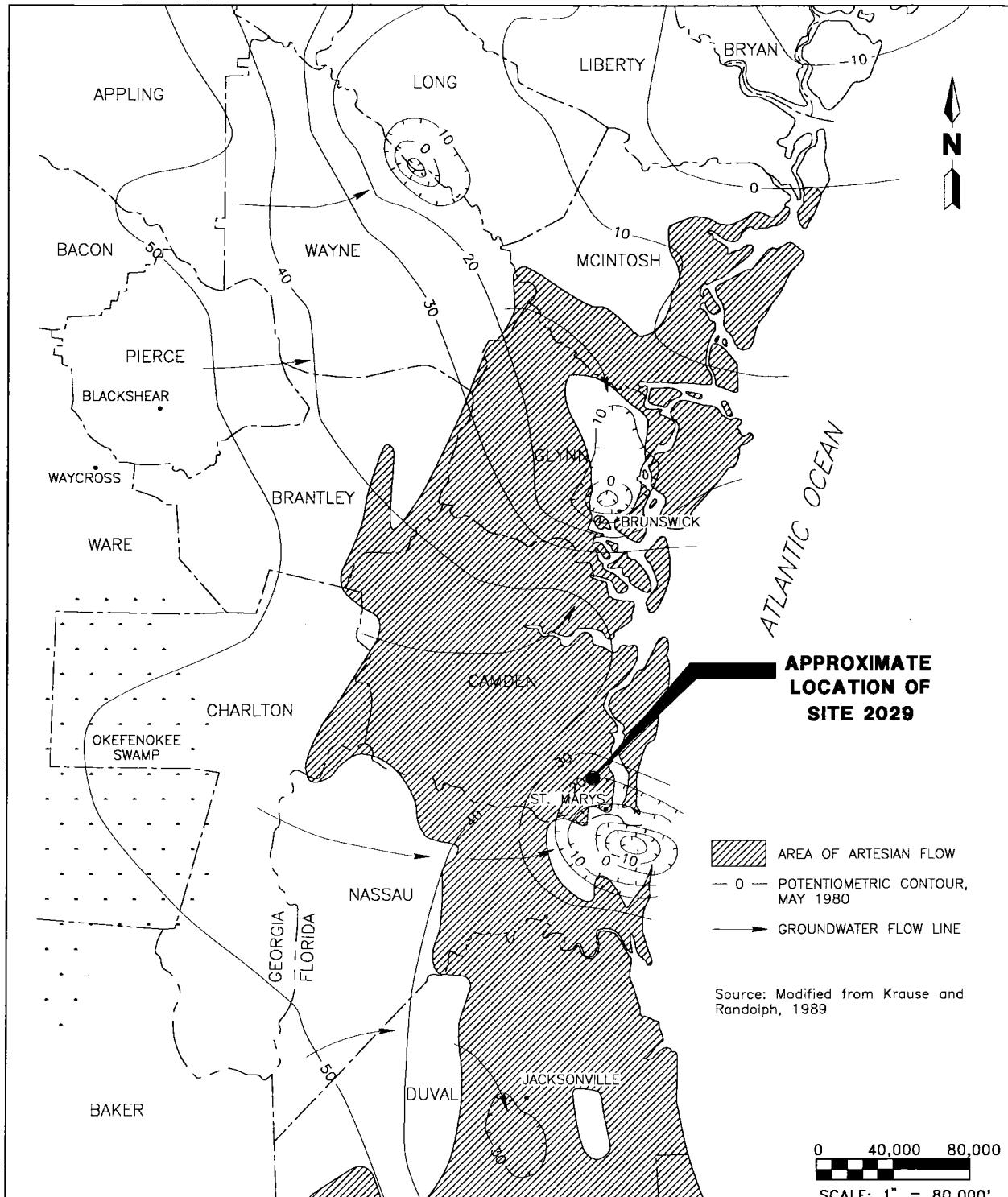
**FIGURE 12**  
**REGIONAL POTENSIOMETRIC SURFACE MAP**  
**FOR THE UPPER FLORIDAN AQUIFER**

H:\KINGSBAY\8515-40\FIG\_2-3\5-18-94



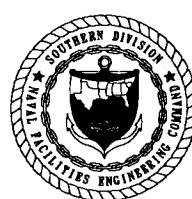
**CORRECTIVE ACTION PLAN**  
**SITE 2029**

**NAVAL SUBMARINE BASE**  
**KINGS BAY, GEORGIA**



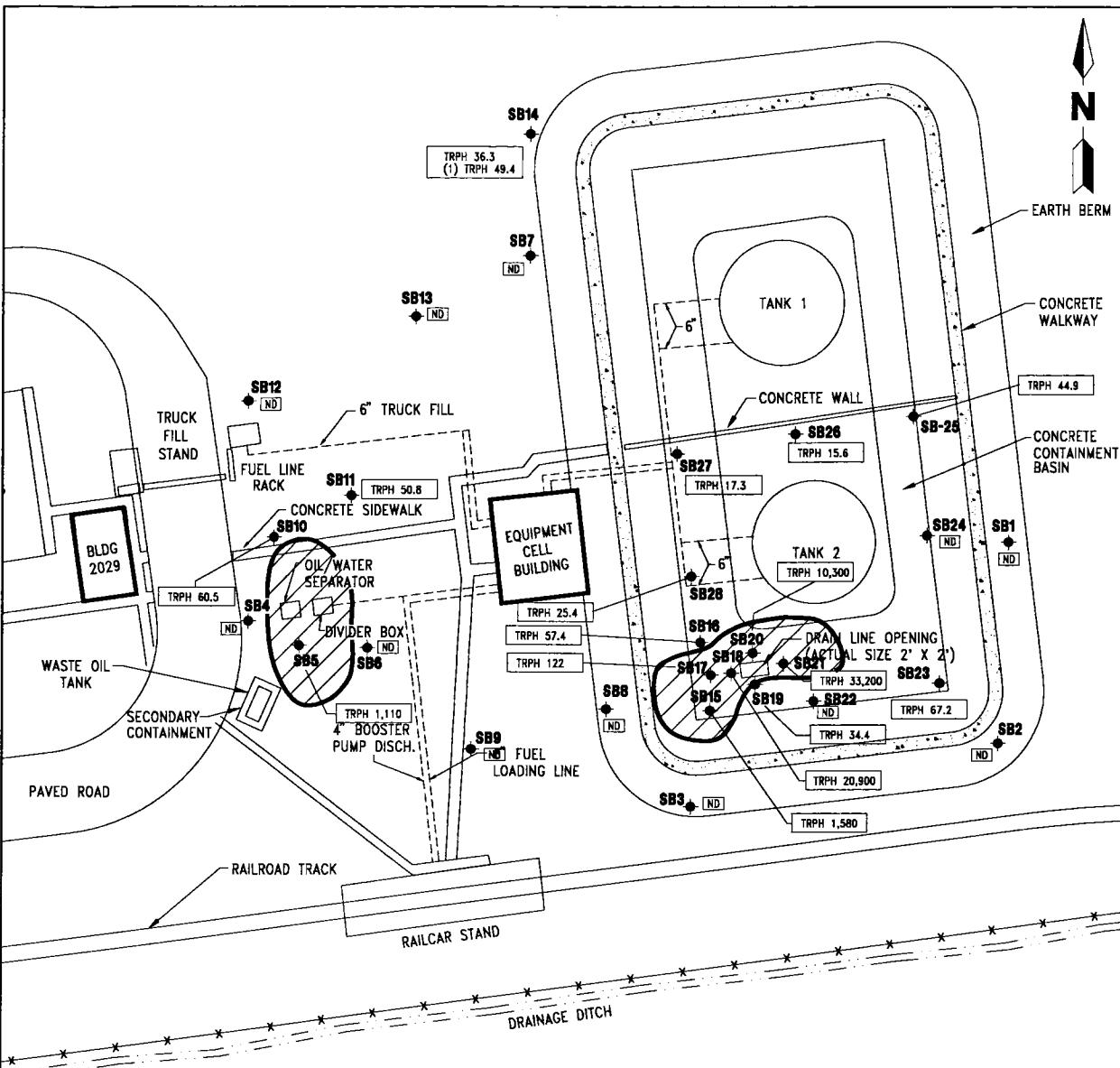
**FIGURE 12**  
**REGIONAL POTENTIOMETRIC SURFACE MAP**  
**FOR THE UPPER FLORIDAN AQUIFER**

H:\KINGSBA\8515-40\FIG\_2-3\11-17-94

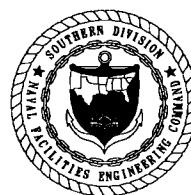


**CORRECTIVE ACTION PLAN  
SITE 2029**

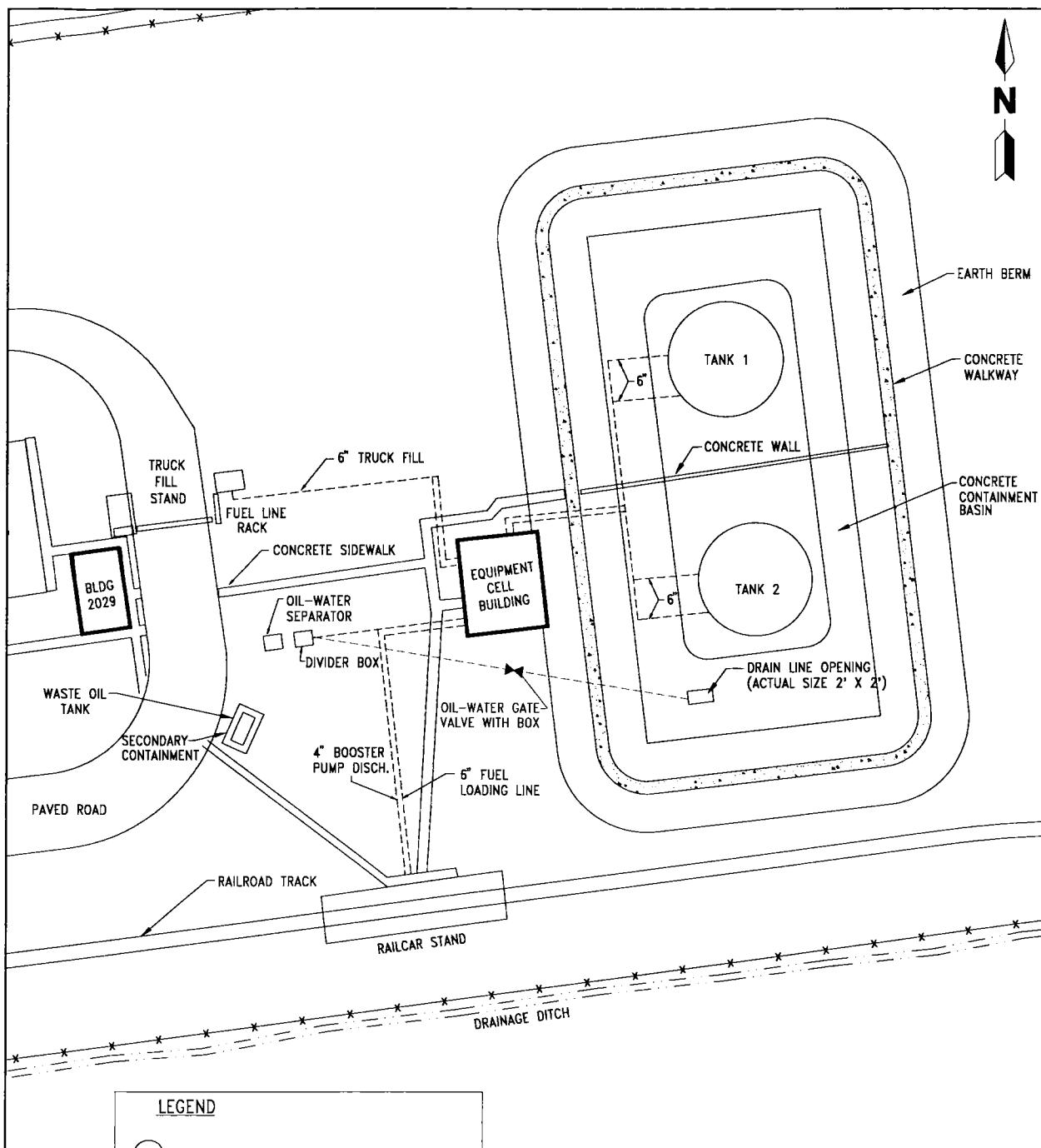
**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**



**FIGURE 7**  
**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH) DISTRIBUTION IN SOIL, DECEMBER 1993 AND MARCH 1994**

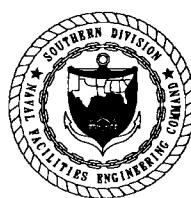


**CORRECTIVE ACTION PLAN SITE 2029**  
**NAVAL SUBMARINE BASE KINGS BAY, GEORGIA**



**FIGURE 2**  
**SITE PLAN**

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**CORRECTIVE ACTION PLAN**  
**SITE 2029**

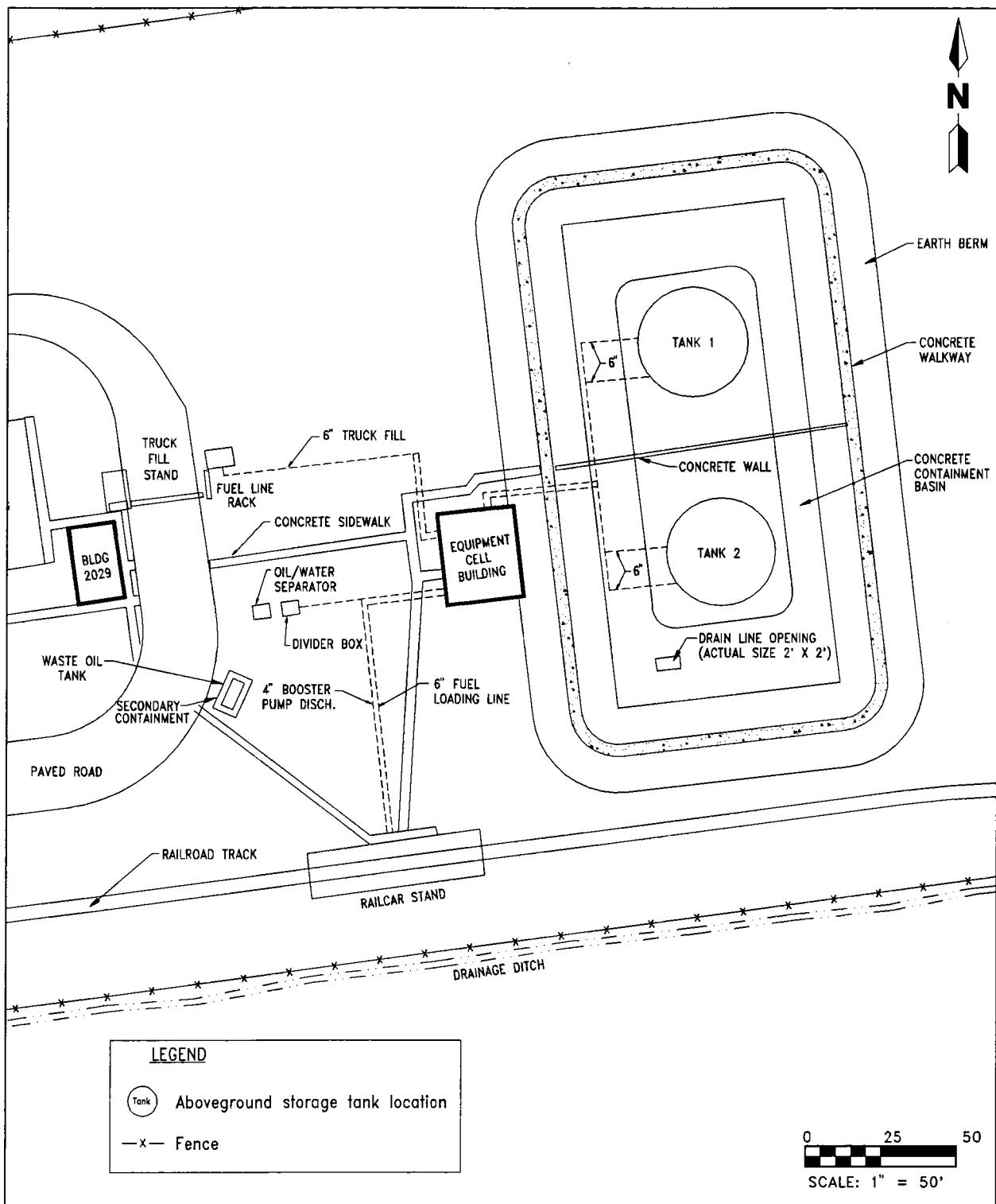
**NAVAL SUBMARINE BASE**  
**KINGS BAY, GEORGIA**

## **APPENDIX A**

### **FIGURES**

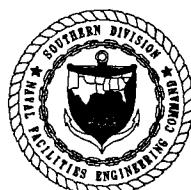
#### LIST OF FIGURES

- Figure 1 Quadrangle Topographic Map of NSB Kings Bay
- Figure 2 Site Plan
- Figure 3 Monitoring Well Location Map
- Figure 4 Groundwater Contamination Distribution Map, December 17, 1993
- Figure 5 Soil Boring Location Map
- Figure 6 Total BTEX Distribution in Soil, December 1993, and March 1994
- Figure 7 Total Recoverable Petroleum Hydrocarbon (TRPH) Distribution in Soil, December 1993, and March 1994
- Figure 8 Georgia State Coordinate System Monuments Map
- Figure 9 Surficial Aquifer Water Table Elevation Contour Map, December 16, 1993
- Figure 10 Flownet, December 16, 1993
- Figure 11 Conceptual Model of the Floridan Aquifer System
- Figure 12 Regional Potentiometric Surface Map for the Upper Floridan Aquifer
- Figure 13 General Soil Map
- Figure 14 Typical Shallow Monitoring Well Construction Diagram
- Figure 15 Definitions of Slug Test Parameters



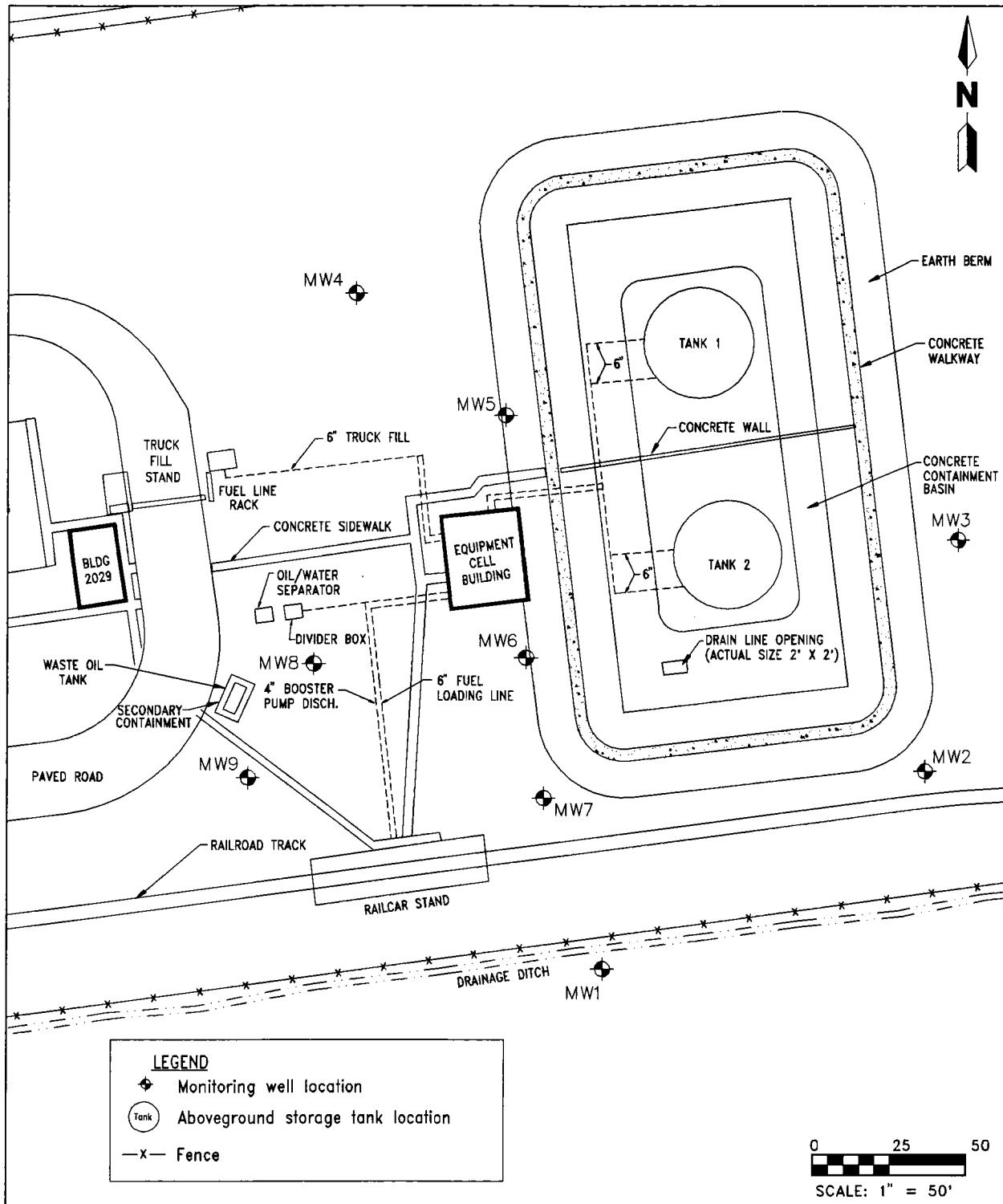
**FIGURE 2**  
**SITE PLAN**

H:/KINGSBAY/SITE2029/KP-WDW/08-3-94



**CORRECTIVE ACTION PLAN**  
**SITE 2029**

**NAVAL SUBMARINE BASE**  
**KINGS BAY, GEORGIA**



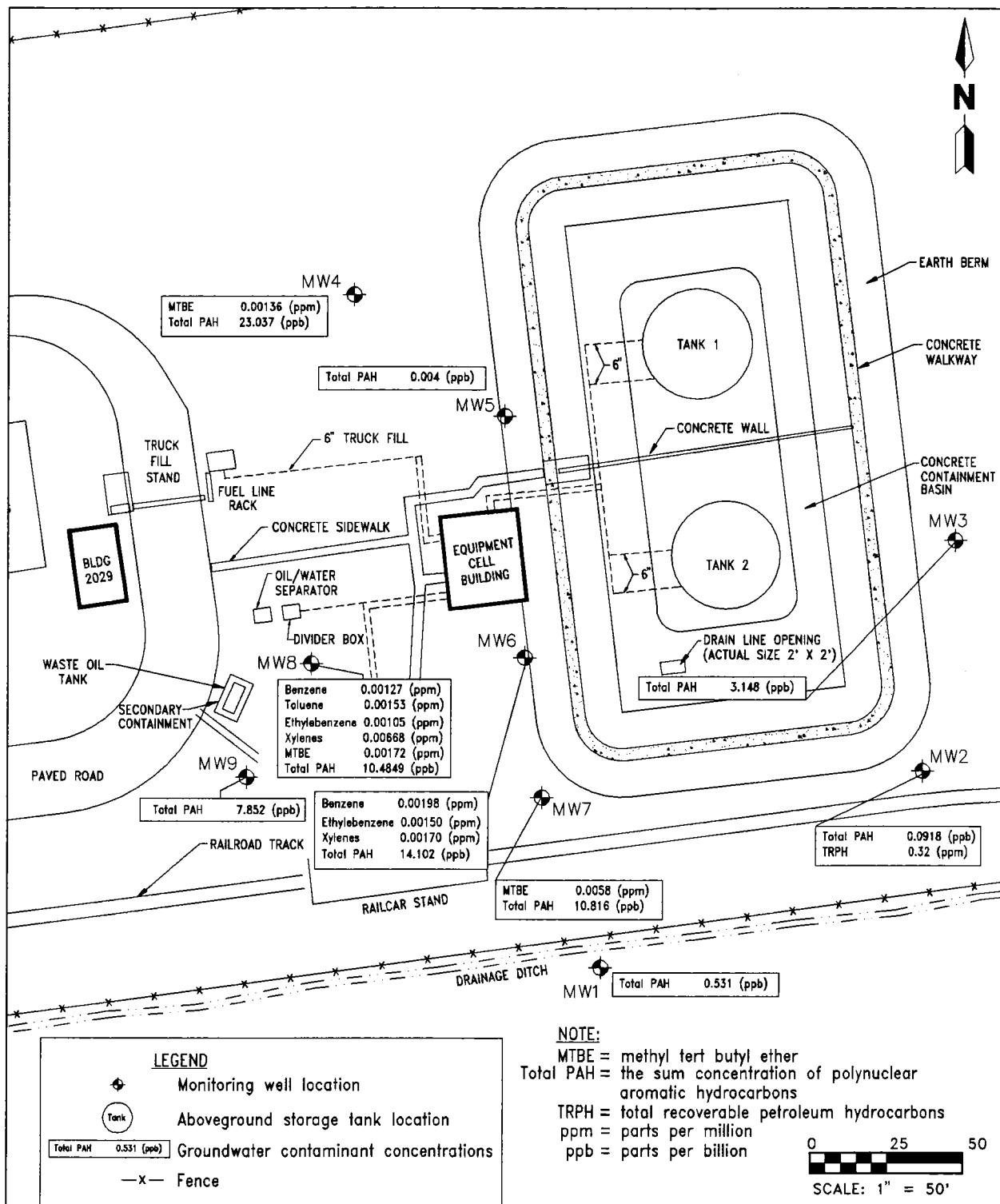
**FIGURE 3**  
**MONITORING WELL LOCATION MAP**

H:/KINGSBAY/SITE2029/KP-WDW-NP/08-3-94



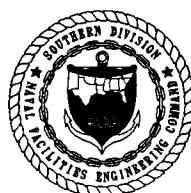
**CORRECTIVE ACTION PLAN  
SITE 2029**

**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**



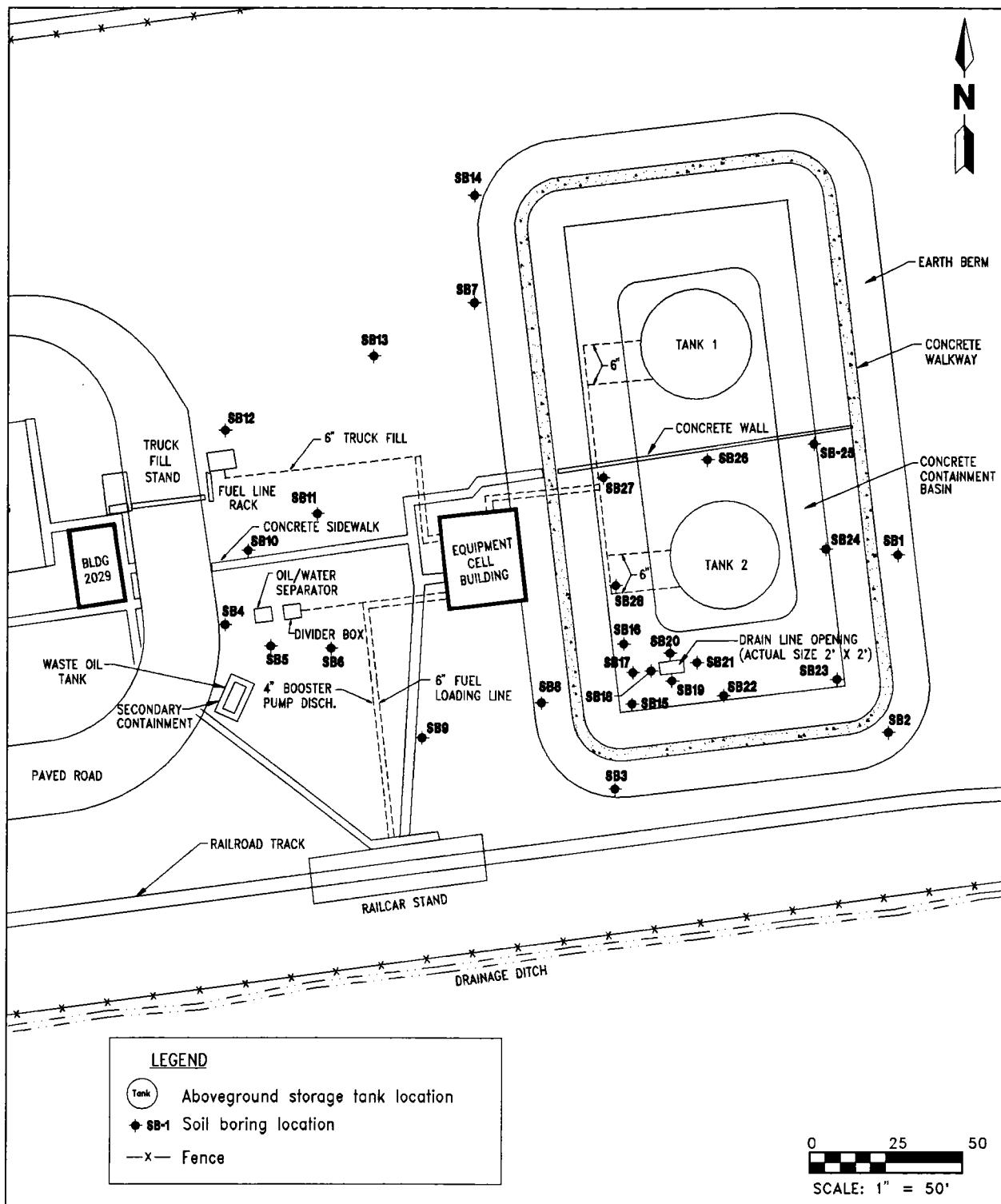
**FIGURE 4**  
**GROUNDWATER CONTAMINATION DISTRIBUTION MAP,**  
**DECEMBER 17, 1993**

H:/KINGSBAY/SITE2029/KGP-WDW-NP/08-3-94



**CORRECTIVE ACTION PLAN  
SITE 2029**

**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**



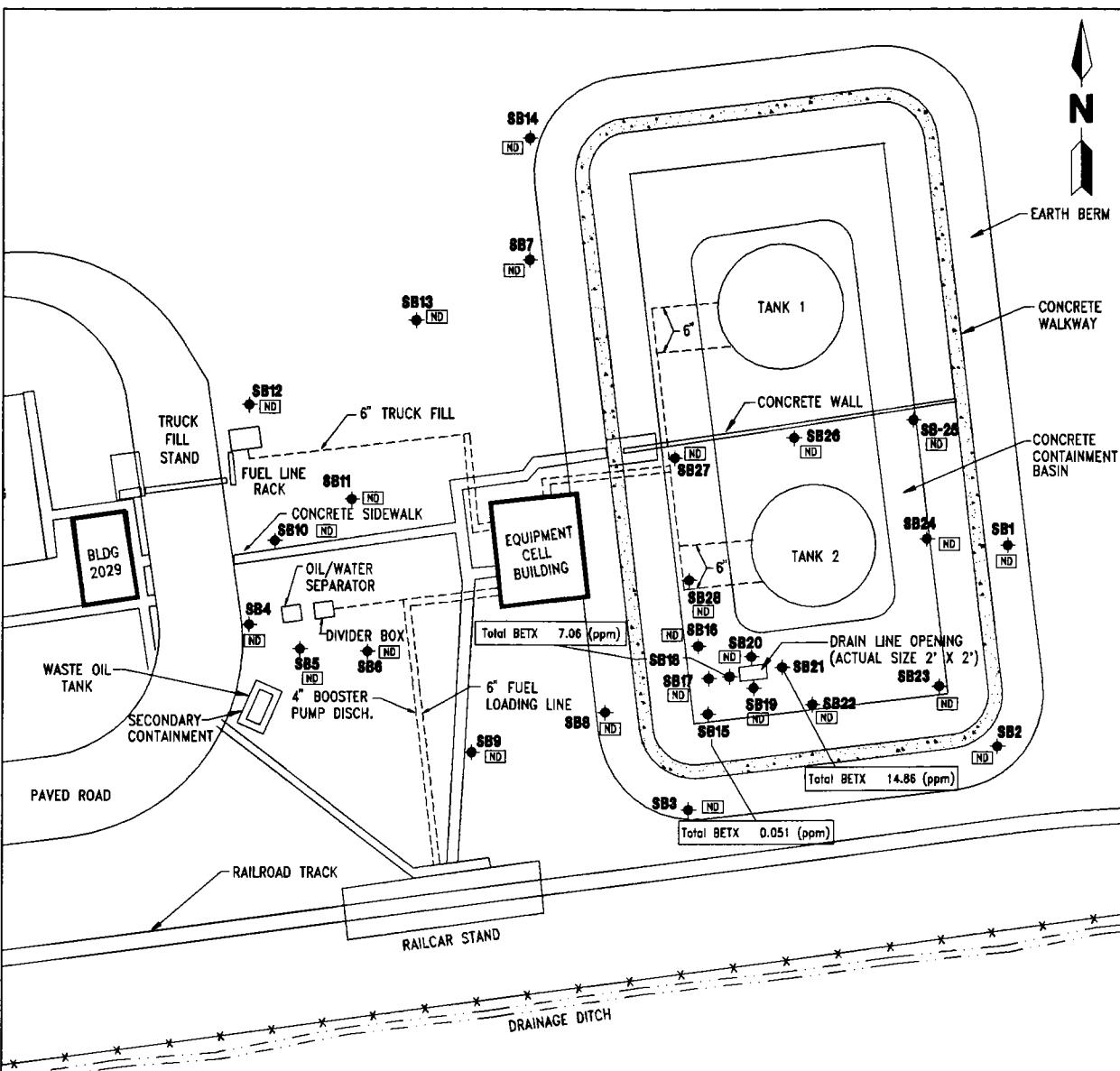
**FIGURE 5  
SOIL BORING LOCATION MAP**

H:/KINGSBAY/SITE2029/KGP-WDW/07-18-94

**CORRECTIVE ACTION PLAN  
SITE 2029**



**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**



<u>LEGEND</u>	
	Aboveground storage tank location
	Soil boring location
	Total BTEX concentration
	Fence

0 25 50  
SCALE: 1" = 50'

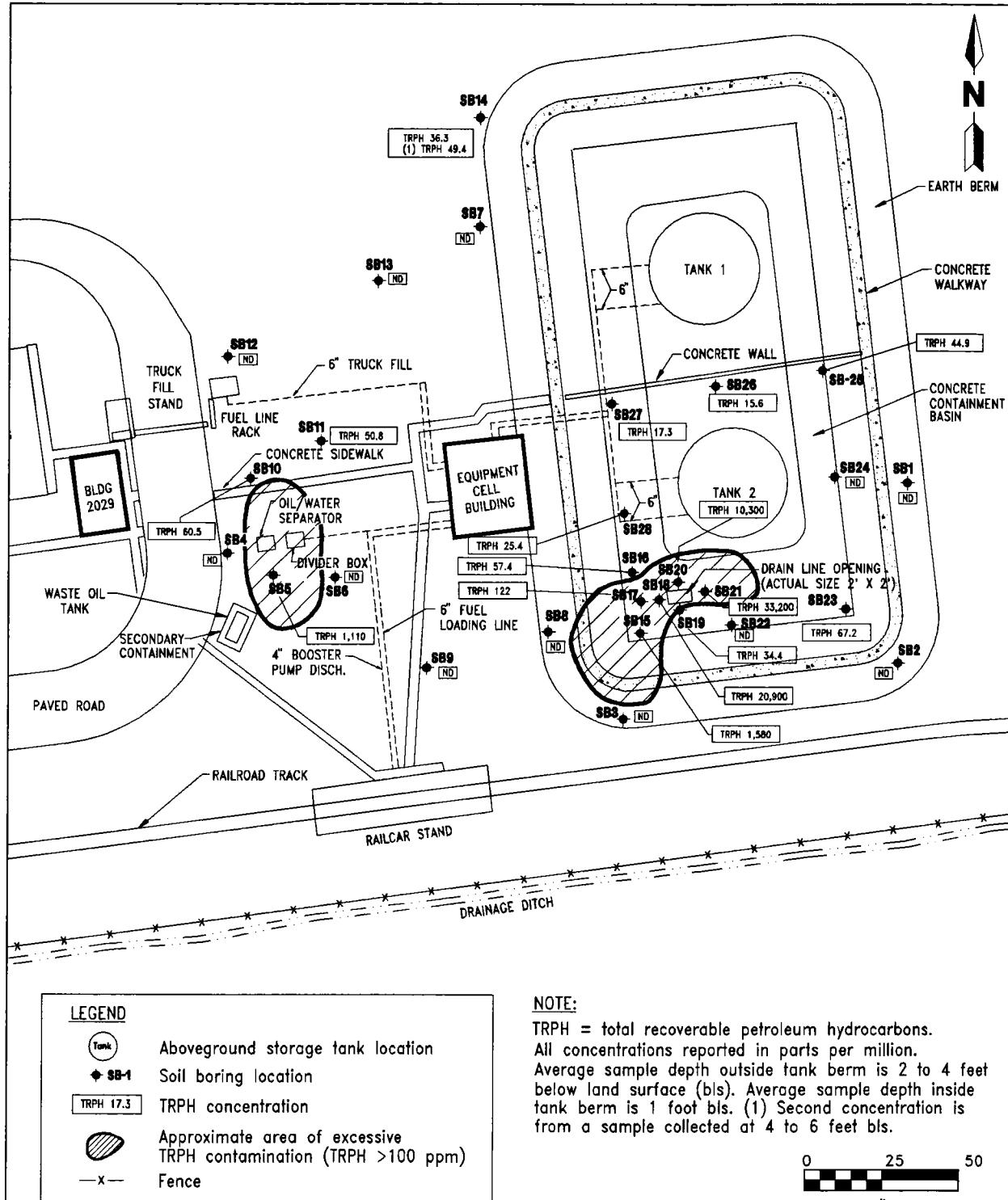
**FIGURE 6**  
**TOTAL BTEX DISTRIBUTION IN SOIL,**  
**DECEMBER 1993 AND MARCH 1994**

H:/KINGSBAY/SITE2029/KGP-WDW-NP/08-04-94



**CORRECTIVE ACTION PLAN**  
**SITE 2029**

**NAVAL SUBMARINE BASE**  
**KINGS BAY, GEORGIA**



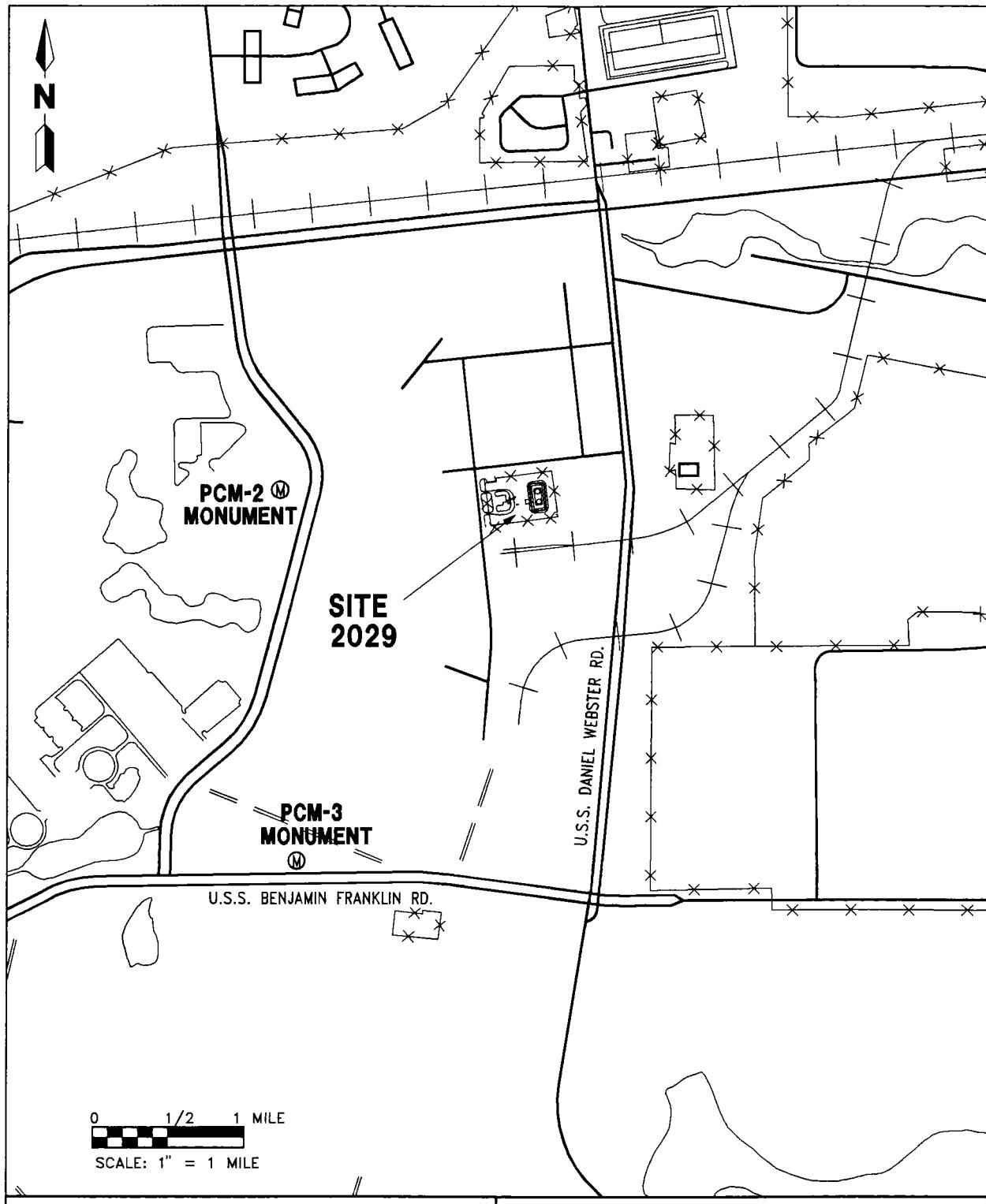
**FIGURE 7**  
**TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH) DISTRIBUTION IN SOIL,**  
**DECEMBER 1993 AND MARCH 1994**

H:/KINGSBAY/SITE2029/KGP-WDW-NP/08-04-94



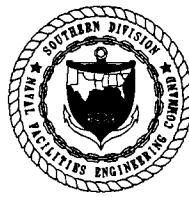
**CORRECTIVE ACTION PLAN  
SITE 2029**

**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**



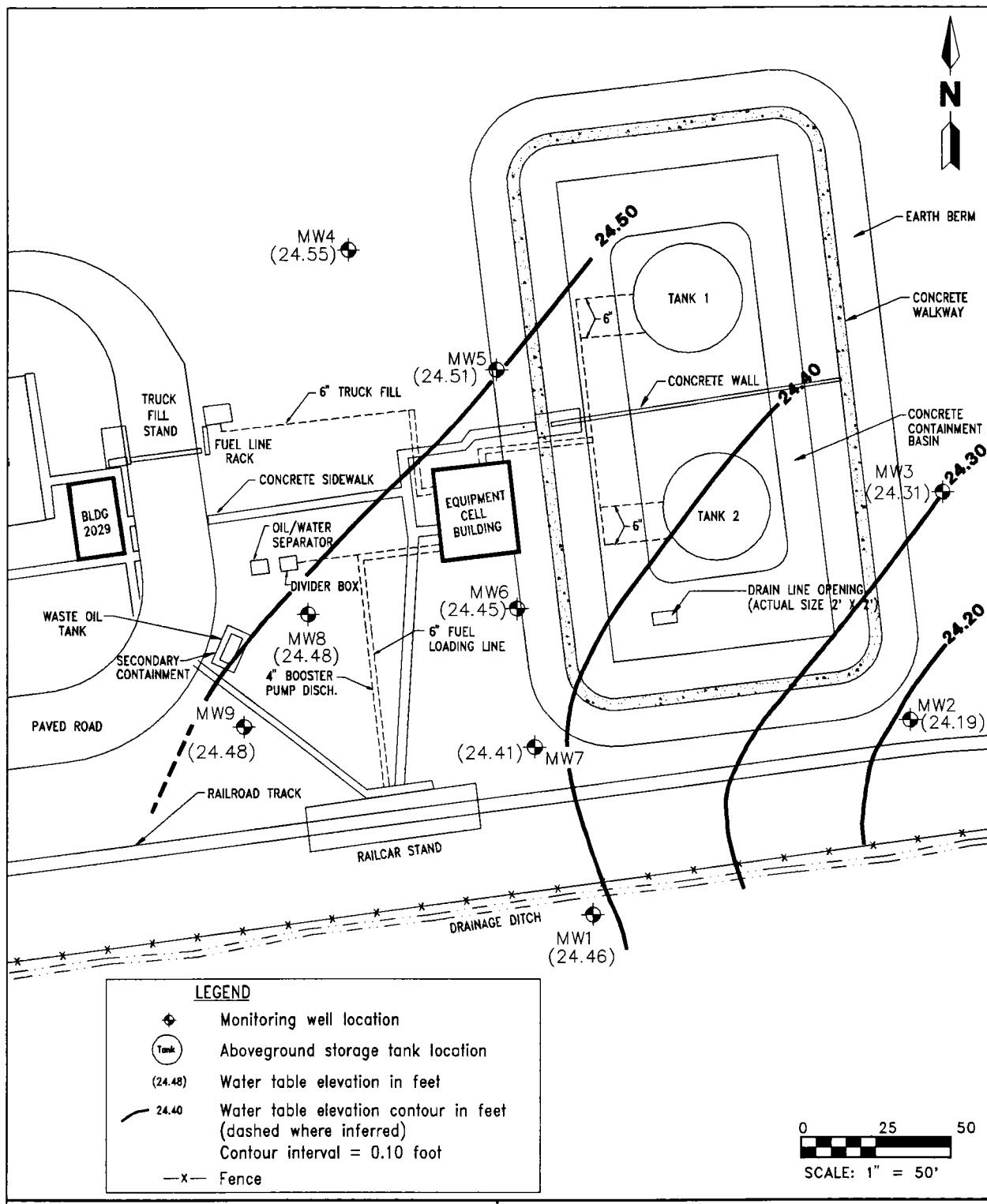
**FIGURE 8**  
**GEORGIA STATE COORDINATE SYSTEM**  
**MONUMENT MAP**

KINGSBAY/KBASE/KGP-WDW/07-18-94



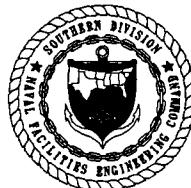
**CORRECTIVE ACTION PLAN**  
**SITE 2029**

**NAVAL SUBMARINE BASE**  
**KINGSBAY, GEORGIA**



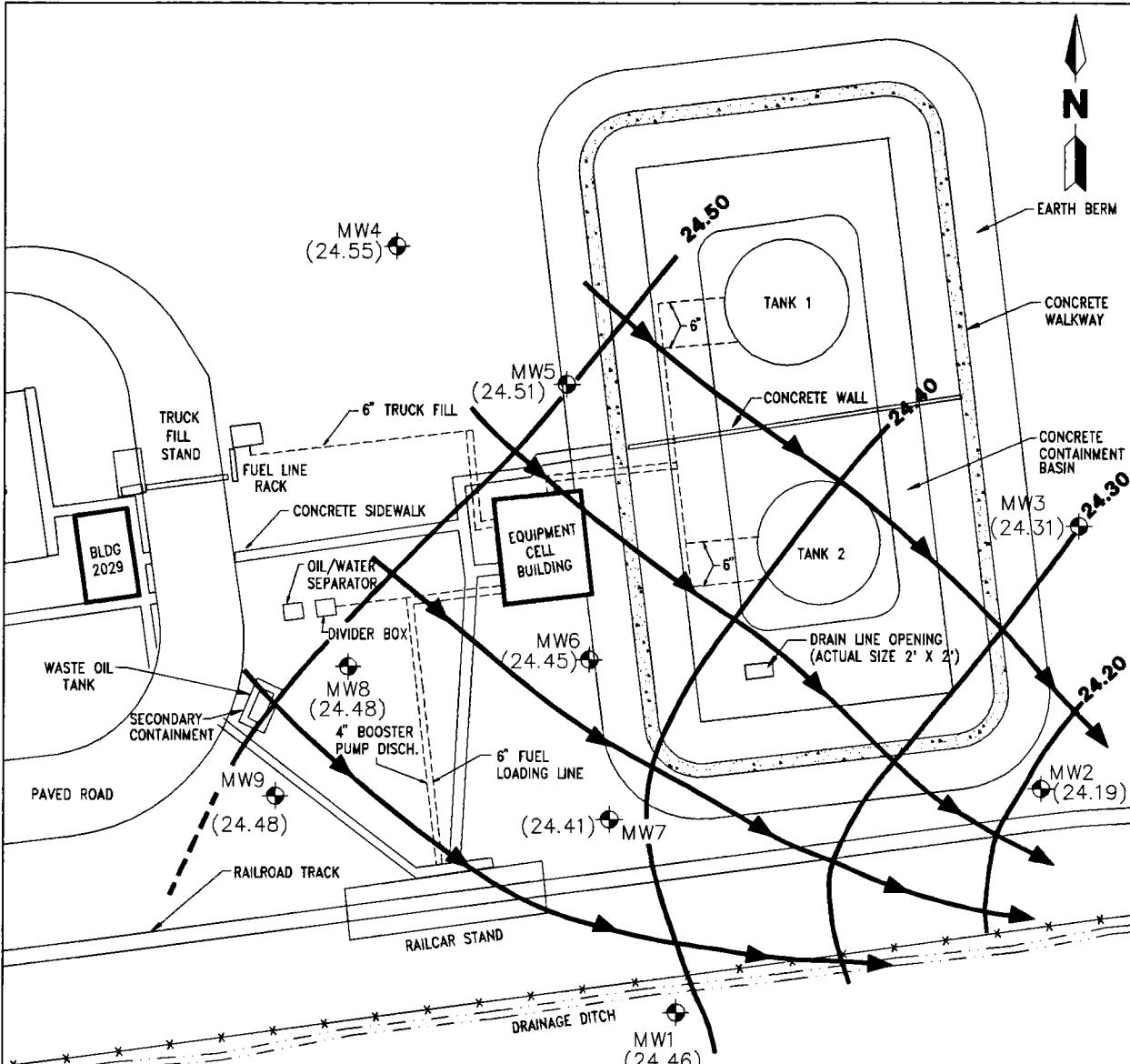
**FIGURE 9**  
**SURFICIAL AQUIFER WATER TABLE**  
**ELEVATION CONTOUR MAP,**  
**DECEMBER 16, 1993**

H:/KINGSBAY/SITE2029/KGP-WDW-NP/08-04-94



**CORRECTIVE ACTION PLAN  
SITE 2029**

**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**



#### LEGEND

- ♦ Monitoring well location
- (Tank) Aboveground storage tank location
- (24.48) Water table elevation in feet
- 24.40 — Water table elevation contour in feet (dashed where inferred)
- Contour interval = 0.10 foot
- x— Fence
- Groundwater flow direction

0 25 50  
SCALE: 1" = 50'

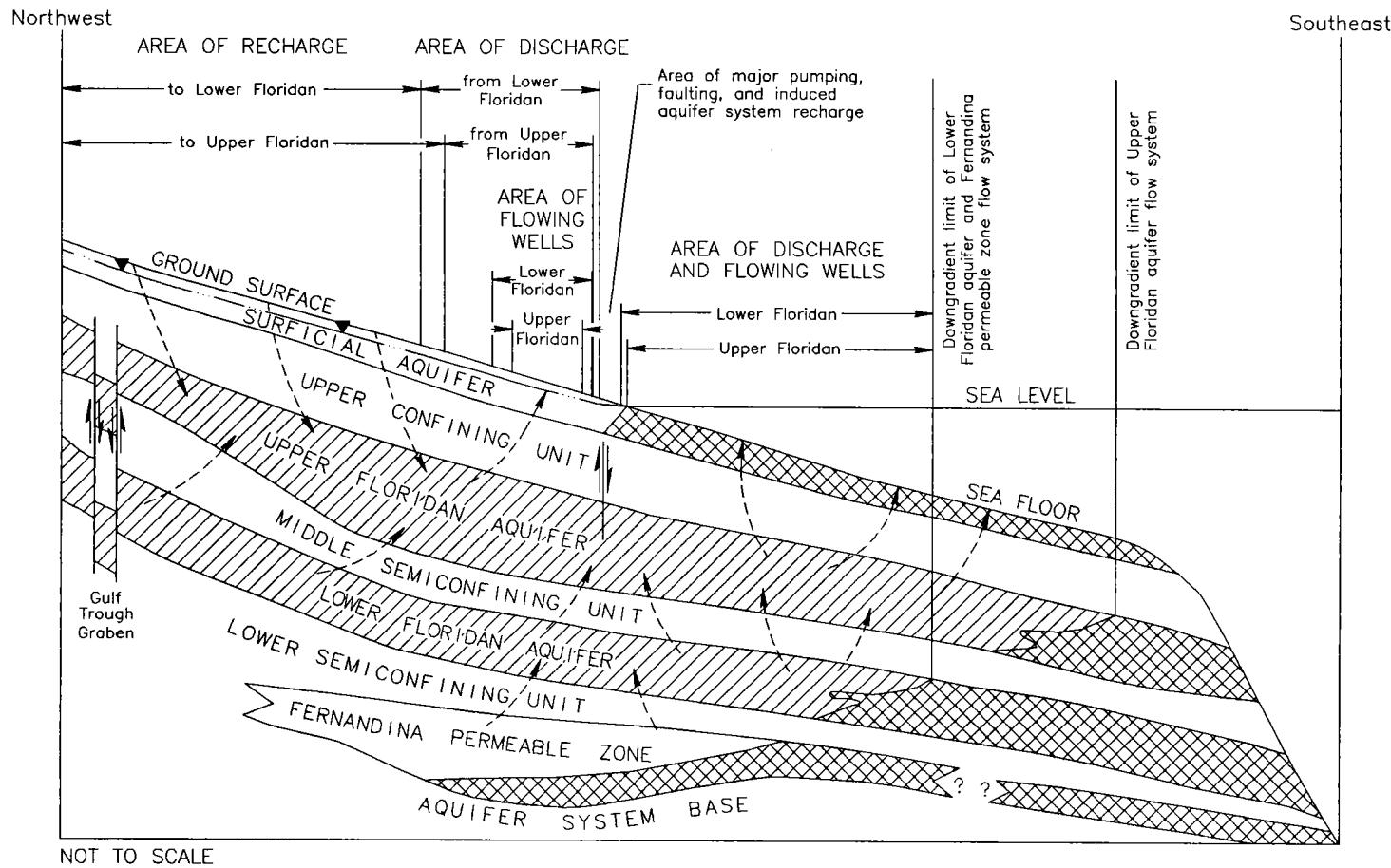
**FIGURE 10**  
**FLOW NET**  
**DECEMBER 16, 1993**

H:/KINGSBAY/SITE2029/KGP-WDW/07-18-94



**CORRECTIVE ACTION PLAN**  
**SITE 2029**

**NAVAL SUBMARINE BASE**  
**KINGS BAY, GEORGIA**

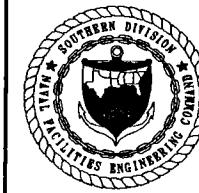


Source: Modified from Krause and Randolph, 1989

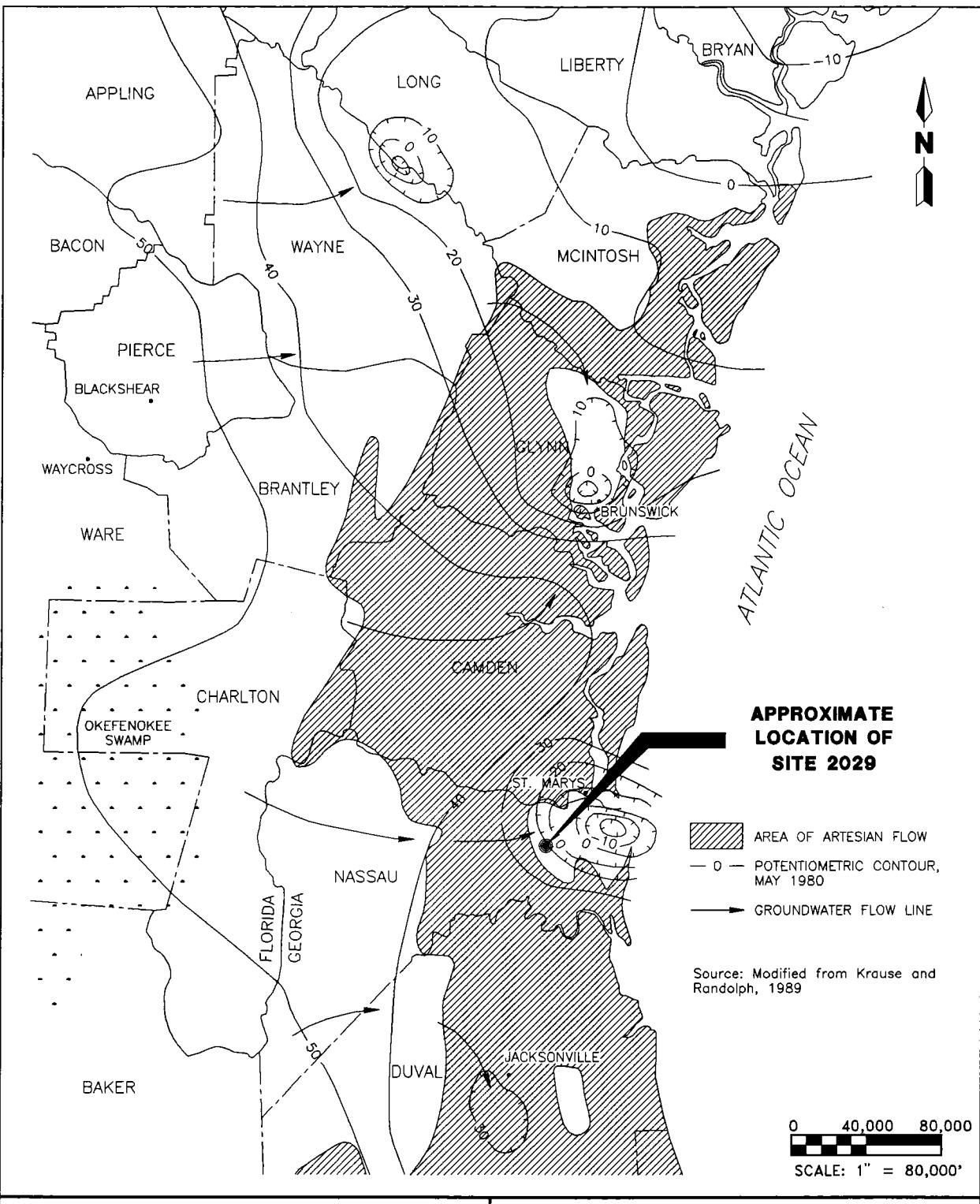
- ▼— WATER TABLE
- ←→ GROUNDWATER CIRCULATION
- ▨ FRESHWATER
- ▨▨ SALTWATER

H:\KINGSBAY\8515-40\FIG\_2-1\5-18-94

**FIGURE 11**  
**CONCEPTUAL MODEL OF THE FLORIDAN**  
**AQUIFER SYSTEM**

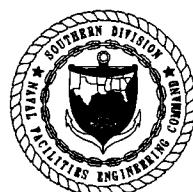


**CORRECTIVE ACTION PLAN**  
**SITE 2029**  
**NAVAL SUBMARINE BASE**  
**KINGS BAY, GEORGIA**



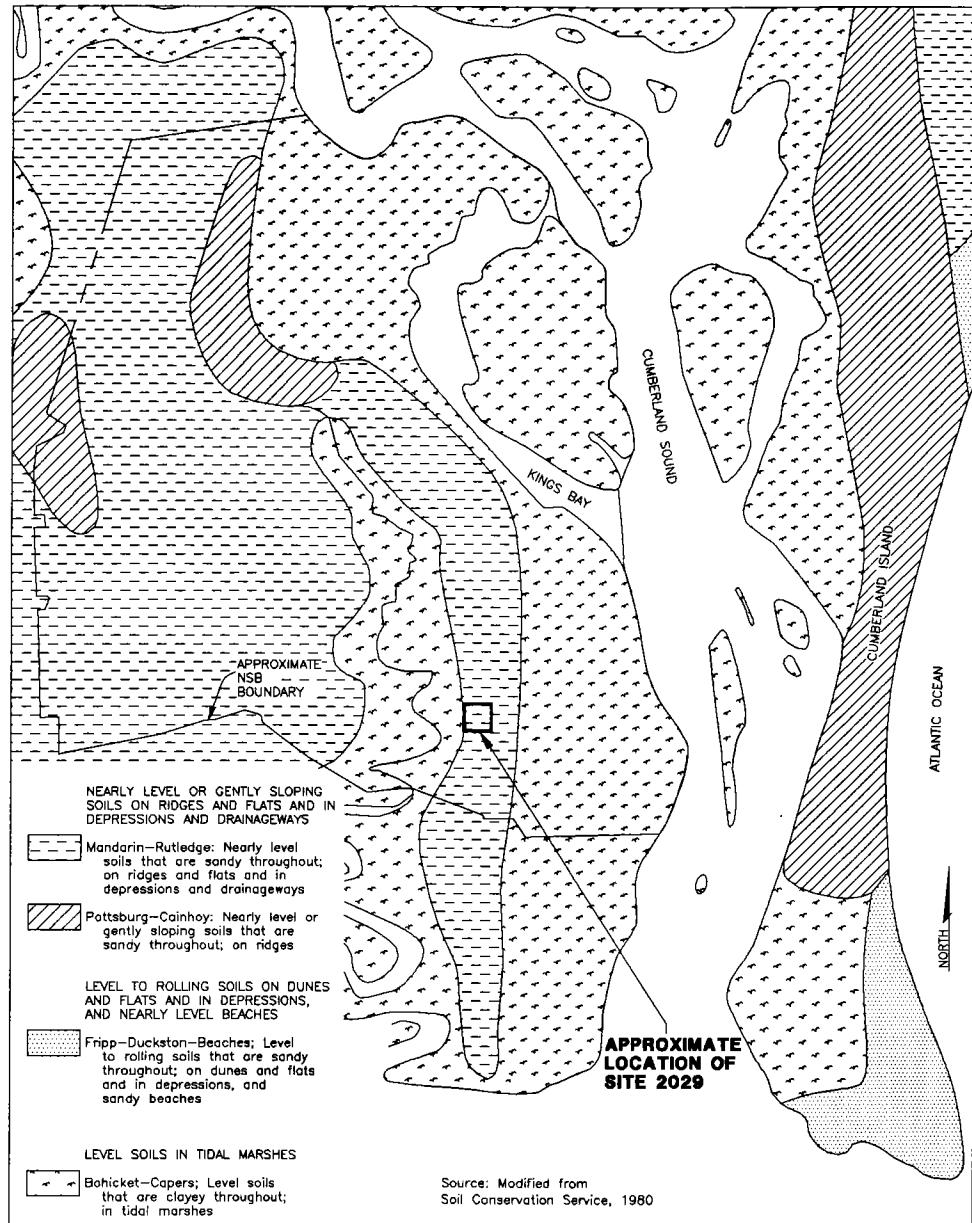
**FIGURE 12**  
**REGIONAL POTENIOMETRIC SURFACE MAP**  
**FOR THE UPPER FLORIDAN AQUIFER**

H:\KINGSBAY\8515-40\FIG\_2-3\5-18-94



**CORRECTIVE ACTION PLAN**  
**SITE 2029**

**NAVAL SUBMARINE BASE**  
**KINGS BAY, GEORGIA**



0 4000 8000  
SCALE: 1" = 8000'

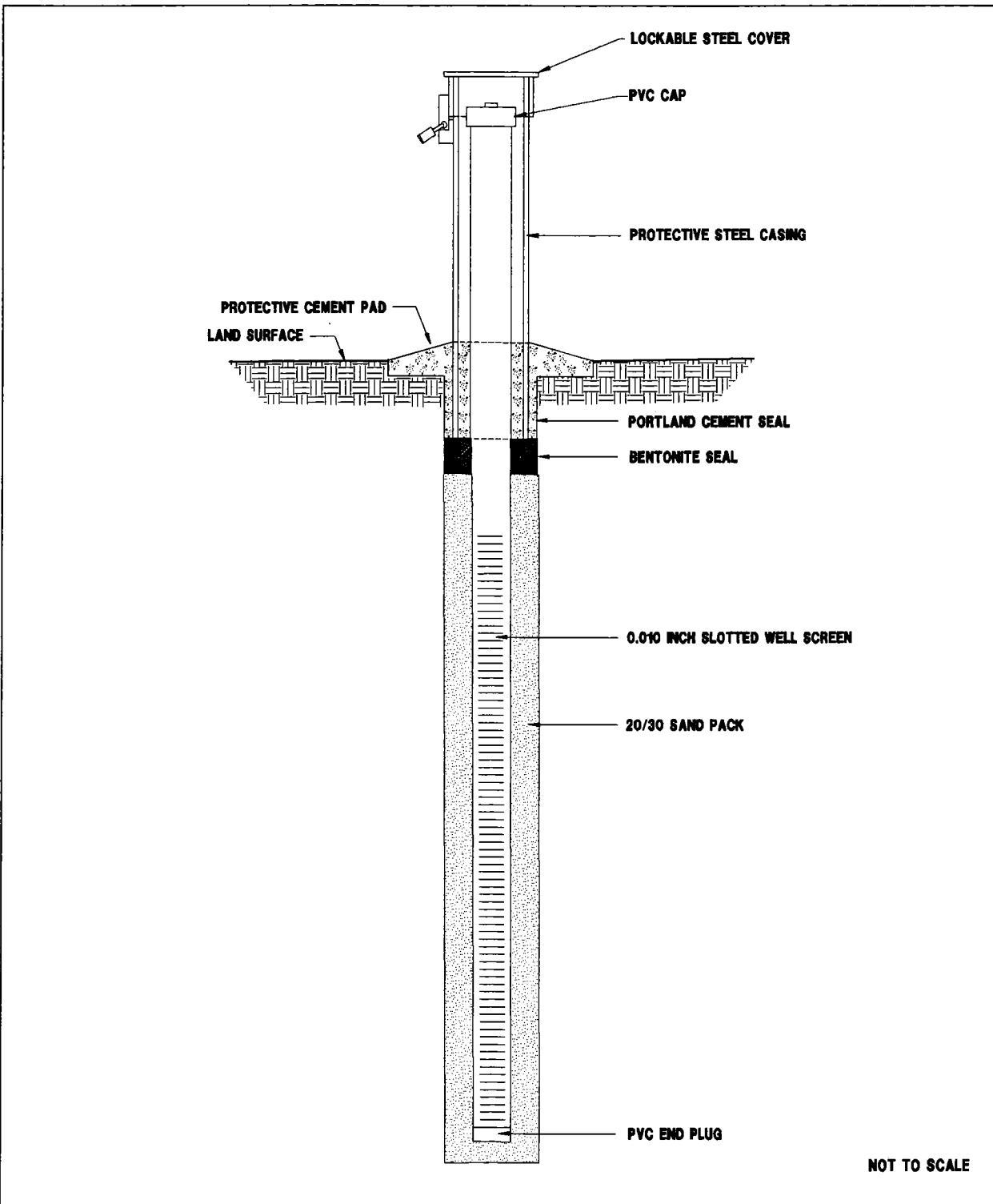
**FIGURE 13**  
**GENERAL SOIL MAP**

H:\KINGSBAY\8515-40\FIG\_2-9\5-18-94



**CORRECTIVE ACTION PLAN  
SITE 2029**

**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**



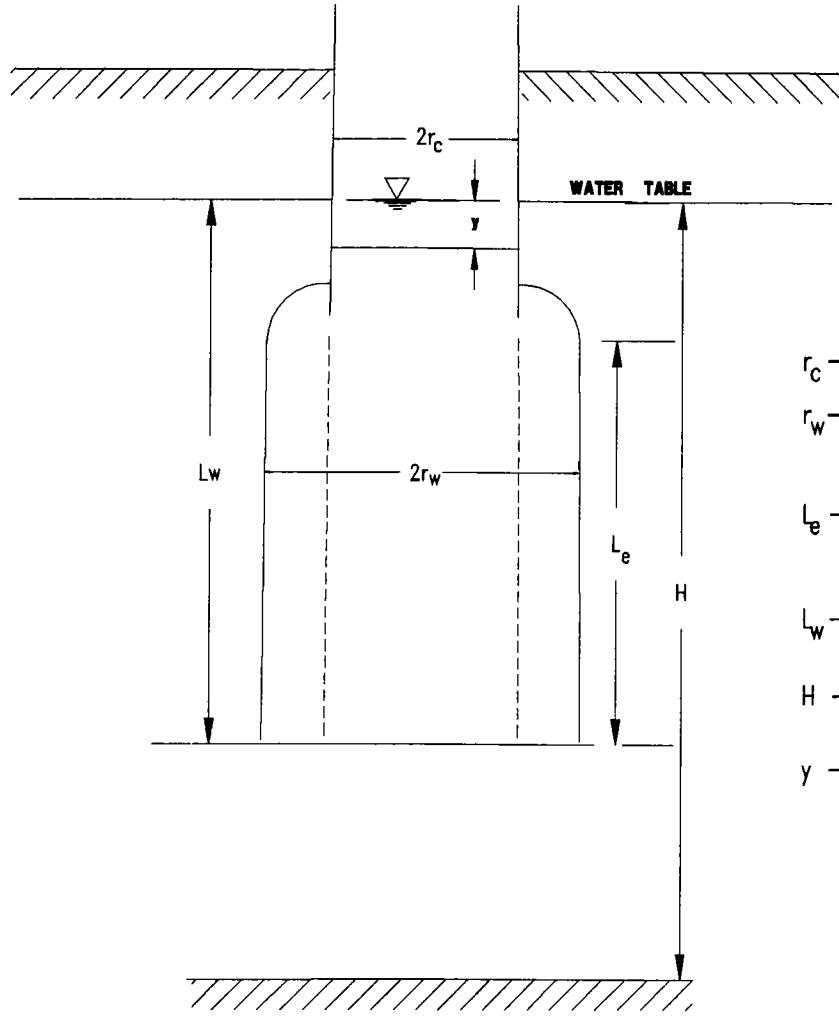
**FIGURE 14**  
**TYPICAL SHALLOW MONITORING**  
**WELL CONSTRUCTION DIAGRAM**

H:\KINGSBAY\8515-40\FIG-A1\7-18-94



**CORRECTIVE ACTION PLAN  
SITE 2029**

**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**



$r_c$  - Radius of well

$r_w$  - Radius of well + total thickness of the sand/gravel pack

$L_e$  - Length of screened interval below the water table

$L_w$  - Depth of well below water table

$H$  - Depth to confining unit below the water table

$y$  - Difference between static water level outside well and water level inside well

**FIGURE 15**  
**DEFINITIONS OF SLUG TEST**  
**PARAMETERS (From Bouwer, 1989)**

H:/PANAMA/D-1/KGP/5-16-94

**CORRECTIVE ACTION PLAN  
SITE 2029**



**NAVAL SUBMARINE BASE  
KINGS BAY, GEORGIA**

**APPENDIX B**

**INVESTIGATIVE METHODOLOGIES AND PROCEDURES**

### Subsurface Soil Collection

Soil samples were collected from outside the bermed tank area on December 1 and 2, 1993, and inside the Tank 2 berm on March 29, 1994.

Soil Samples were collected outside the berm using the Terraprobe™ system. The Terraprobe™ system's hydraulic probe has the capability to push and/or hammer 3/4-inch diameter rods and specialized probe tips into the subsurface for the collection of environmental samples. Discrete soil samples were collected from the subsurface using the Terraprobe™ system, which comprises a self-contained, hydraulically operated earth probe. The sample tube is initially driven to the desired depth by the hydraulic pushing and hammer action. Initially the soil probe is closed and does not allow soil to enter the tube until the sample depth is reached. After the sampling depth is reached a set of extension rods is removed from the probe rods connected to the piston stop. This allows the soil probe tip to move upward when the rods are driven farther into the soil. The probe is pushed or hammered into the soil, the tip remaining stationary and the soil probe filling with soil. The sample tube collects approximately 12 inches of soil when the probe tip is fully retracted into the probe. The rods are then removed from the hole and the soil core is extruded using a hydraulic extruder. These samples were typically collected at 2-foot intervals to the depth of the water table. The purpose of the soil collection was to delineate the horizontal and vertical extent of soil contamination and to optimize monitoring well placement, which was conducted in a separate phase.

Soil samples collected inside the Tank 2 berm were collected using manual hand auger techniques. The Terraprobe™ system could not be used due to inaccessibility. Soil sample locations coincided with previous sampling locations selected by the Navy. Expandable seals had been placed in the previously sampled locations to prevent leakage. These seals were removed and the hand auger was advanced to 6 inches above the desired sampling depth. A decontaminated auger was then used to collect the laboratory soil sample. Soil samples were removed from the hand auger with decontaminated stainless-steel spoons and placed directly into sampling jars. The purpose of collecting these soil samples was to confirm the result of the previously analyzed soil samples performed by the Navy.

### Monitoring Well Construction

All shallow monitoring wells were installed using a drill rig with hollow-stem augering capabilities. Deep monitoring wells were installed using a drill rig with mud rotary capabilities. All monitoring wells installed during the investigation were constructed of 2-inch inside diameter (ID), schedule 40, polyvinyl chloride (PVC) casing with flush-threaded joints and 0.010-inch machine-slotted screen. Shallow monitoring wells were constructed with 10 feet of screen. The deep monitoring well was constructed with 5 feet of screen. PVC well casing extends from the top of the screen to above land surface. A 20/30 grade silica sand filter pack was placed in the annular space to approximately 1 to 2.5 feet above the top of the screen. A 0.5- to 1-foot thick bentonite seal was then placed on top of the filter pack. Monitoring wells were installed with aboveground protective steel casings to protect the well riser. Protective steel casings were equipped with locking covers. A cement seal and cement pad were placed from the seal to the ground surface around each protective casing to secure the casing, prevent surface runoff from entering the borehole, and to

direct runoff away from the casing. Appendix A, Figure 14, depicts a typical shallow monitoring well construction diagram with an aboveground protective steel casing.

Each newly installed monitoring well was developed 24 hours after installation. Development consisted of the removal of a minimum of five well volumes with an air driven submersible pump.

Additional construction details for each monitoring well have been included in Appendix E, Lithologic Logs.

#### Water Level Measurements

Groundwater levels were measured using an electric water-level indicator and an engineering tape divided into increments of 0.01 foot. The wells were checked for the presence of free product by visual observation of the groundwater sample taken from each well using clear extruded Teflon™ bailers. Water level elevations were calculated by subtracting the measured depth to groundwater from the elevation at the top of the well casing.

#### Soil Sampling

All soil samples were collected in accordance with ABB Environmental Services, Inc. (ABB-ES), Comprehensive Quality Assurance Plan (CompQAP). Soil samples collected in December 1993 with the Terraprobe™ system were shipped to Environmental Science & Engineering, Inc. (ESE), Gainesville, Florida. Samples collected in March 1994 with manual augers were sent to Wadsworth/ALERT Laboratories, Tampa, Florida. All soil samples collected were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (USEPA) Method 8020 and total recoverable petroleum hydrocarbons (TRPH) by USEPA Method 9071/9073.

#### Groundwater Sampling

Groundwater samples were collected in accordance with the ABB-ES CompQAP. The monitoring wells were purged with a Teflon™ bailer. Purging continued until five well volumes had been removed. Groundwater samples were collected using an extruded Teflon™ bailer. Each sample was placed into its appropriate container and preserved as specified by the required sample analysis and as outlined in the ABB-ES CompQAP. All samples were appropriately packaged and placed on ice in coolers. The coolers were then sealed and shipped to Environmental Science & Engineering, Inc. (ESE), Gainesville, Florida. All groundwater samples collected during the contamination assessment (CA) were analyzed for BTEX by USEPA Method 602, polynuclear aromatic hydrocarbon (PAH) by USEPA Method 8310, and TRPH by USEPA Method 418.1.

#### Slug Tests Procedures

The slug test developed by Bouwer and Rice (1976) measures the saturated hydraulic conductivity (K) using a single well. The test method used is termed a "rising head" test and is performed by quickly withdrawing a volume of water (slug) from the well and measuring the subsequent rate of the rising water level in the well. Bouwer (1989) recommends the rising head slug test for wells with

screen intervals that are only partially submerged or only partially penetrate unconfined aquifers.

The slug was constructed of 1.6-inch outside diameter stainless-steel pipe, 2.8 feet in length with watertight caps at both ends. Water level changes in the monitoring wells were recorded using a data logger and pressure transducer. The pressure transducer was suspended less than 1 foot above the bottom of the well and an initial water level was recorded prior to beginning the test. The slug was then lowered into the well to a depth below the original water table. Water levels were then observed until they stabilized at the original level. The slug was then withdrawn from the well and the change in water level (rising head) was recorded at predetermined time intervals until the water level recovered to the original level. A minimum of three rising head tests were conducted for each well to obtain an average recovery response.

**APPENDIX C**  
**LABORATORY ANALYTICAL DATA**

**GROUNDWATER ANALYTICAL RESULTS  
DECEMBER 17, 1993**

# **SAMPLE DATA PACKAGE**

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-QC Summary Data	31
-Sample Data	34
-Raw QC Data	47
VOCs (Batch G45735)	60
-QC Summary Data	62
-Sample Data	65
-Raw QC Data	76
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-Sample Data	97
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PAHs (Batch G45531)	182
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PAHs (Batch G45532)	227
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-QC Summary Data	317
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-Sample Data	355
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# **CASE NARRATIVE**

## CASE NARRATIVE

January 21, 1994

For: ESE Field Group NABKB2B

Forty three water samples including associated aqueous blanks were evaluated for selected UST-type parameters, under NEESA Level C protocols. The accompanying *Sample/Method/Date/Batch Cross Reference* summarizes ID Cross References, Dates of Collection, Preparation, and Analysis, and ESE Batch numbers.

Copies of Chain-of-Custody are enclosed.

In general, all QC parameters were within criteria except for sample matrix quality control exceedances which were due to matrix effects. Following are any exceptions or additions to this statement, identified by ascending batch number as they are presented in the *QC Summary*.

000003

PAHs, Batch G45230

Surrogate recovery for NABKB2B\*22 slightly exceeded the Lower Control Limit criterion at 39%. The analyst observed a shoulder peak that interfered with the surrogate peak integration, suggesting the recovery may not indicate a poor extraction and negative bias that would otherwise be indicated. The PAHs detected in this sample totalled less than 10 ug/L; a possibility of a slight negative bias is therefore indicated.

PAHs, Batch G45531

Sample NABKB2B\*13 had a surrogate recovery of 371%, which the analyst attributed to likely matrix interference including high levels of target compounds; approximately 20 ug/L of total PAHs were reported for this sample. Sample NABKB2B\*14 had a surrogate recovery of 19%, which the analyst attributed to a likely spiking error; only trace levels of PAHs were reported in this sample. Reruns of both extracts yielded similar results. Results for both samples should be considered as estimates.

PAHs, Batch G45533

Sample NABKB2B\*42 has a surrogate recovery slightly below the LCL criterion at 39%, which the analyst attributed to possible matrix effect; PAHs in this sample totalled approximately 4 ug/L. Sample Matrix Spikes (MS/MSDs) associated with this batch (of NABKB2B\*39) had acceptable but low (45%) surrogate recovery in 1 of these spikes; this same spike had 2 analytes with low target analyte recoveries (25%). Overall, these QC data indicate a sample-specific extraction problem that would appear to be limited to 1 of the 2 MS samples and to NABKB2B\*42. A slight negative bias may therefore be indicated for the results of NABKB2B\*42.

TRPH, Batch G45748

No MSD was analyzed in this batch. Insufficient sample volume was provided from the field, as had been anticipated. This was documented in a Corrective Action report included in this document and in ESE's monthly Progress Report to NEESA.

TRPH, Batch G45757

The Standard/Blank Spike (SP) and MS/MSD samples had recoveries slightly below the LCL of 76%, at 65, 72, and 74% respectively. The analyst determined that the spiking solution needed replacement (which was then done). Slight negative bias may be indicated for the sample results reported for this batch; however, all results were reported as not-detected. Also, no MSD was analyzed in this batch. Insufficient sample volume was provided from the field, as had been anticipated. This was documented in a Corrective Action report included in this document and in ESE's monthly Progress Report to NEESA.

TRPH, Batch G45786

No MSD was analyzed in this batch. Insufficient sample volume was provided from the field, as had been anticipated. This was documented in a Corrective Action report included in this document and in ESE's monthly Progress Report to NEESA.

## **SAMPLE ID & DISPOSITION TABLE**

Environmental Science and Engineering, Inc.  
SAMPLE IDENTIFICATION & DISPOSITION TABLE  
01/20/94

PAGE 1

SAMPLE ID	STATION ID	COLLECT.	RECEIPT	CLASSIFICATION	EXTRACT.	ANALYSIS	C-E	E-A	C-A	ESE	Batch
NABKB2B*18	2029-DP	12/17/93	12/18/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			26	G45748	
					NA	12/22/93			5	G45735	
					12/22/93	01/06/94	5	15	20	G45531	
NABKB2B*10	2029-MW1	12/17/93	12/18/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			26	G45748	
					NA	12/21/93			4	G45735	
					12/22/93	01/06/94	5	15	20	G45531	
NABKB2B*11	2029-MW2	12/17/93	12/18/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			26	G45748	
					NA	12/21/93			4	G45735	
					12/22/93	01/06/94	5	15	20	G45531	
NABKB2B*12	2029-MW3	12/17/93	12/18/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			26	G45748	
					NA	12/21/93			4	G45735	
					12/22/93	01/06/94	5	15	20	G45531	
NABKB2B*13	2029-MW4	12/17/93	12/18/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			26	G45748	
					NA	12/21/93			4	G45735	
					12/22/93	01/06/94	5	15	20	G45531	
NABKB2B*14	2029-MW5	12/17/93	12/18/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			26	G45748	
					NA	12/21/93			4	G45735	
					12/22/93	01/06/94	5	15	20	G45531	
NABKB2B*15	2029-MW6	12/16/93	12/18/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			27	G45748	
					NA	12/21/93			5	G45735	
					12/22/93	01/06/94	6	15	21	G45531	
NABKB2B*16	2029-MW7	12/16/93	12/18/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			27	G45748	
					NA	12/21/93			5	G45735	
					12/22/93	01/06/94	6	15	21	G45531	
NABKB2B*17	2029-MW8	12/17/93	12/18/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			26	G45748	
					NA	12/22/93			5	G45735	
					12/22/93	01/07/94	5	16	21	G45531	
NABKB2B*51	2029-MW9	12/17/93	12/18/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			26	G45748	
					NA	12/22/93			5	G45735	
					12/22/93	01/06/94	5	15	20	G45531	
NABKB2B*30	3022-DP	12/14/93	12/16/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/07/94	01/08/94	24	1	25	G45757
					NA	12/19/93			5	G45177	
					12/18/93	12/21/93	4	3	7	G45230	
NABKB2B*19	3022-MW1	12/14/93	12/16/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/07/94	01/08/94	24	1	25	G45757
					NA	12/19/93			5	G45177	
					12/18/93	12/20/93	4	2	6	G45230	
NABKB2B*28	3022-MW10D	12/15/93	12/16/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/12/94			28	G45748	
					NA	12/19/93			4	G45177	
					12/18/93	12/21/93	3	3	6	G45230	
NABKB2B*20	3022-MW2	12/14/93	12/16/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/07/94	01/08/94	24	1	25	G45757
					NA	12/19/93			5	G45177	
					12/18/93	12/20/93	4	2	6	G45230	
NABKB2B*21	3022-MW3	12/14/93	12/16/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/07/94	01/08/94	24	1	25	G45757
					NA	12/19/93			5	G45177	
					12/18/93	12/21/93	4	3	7	G45230	
NABKB2B*22	3022-MW4	12/14/93	12/16/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/07/94	01/08/94	24	1	25	G45757
					NA	12/19/93			5	G45177	
					12/18/93	12/21/93	4	3	7	G45230	
NABKB2B*23	3022-MW5	12/14/93	12/16/93	TRPH - EPA 9071/9073 VOCS - EPA 8020 PAH'S - EPA 8310/3520	NA	01/07/94	01/08/94	24	1	25	G45757
					NA	12/19/93			5	G45177	
					12/18/93	12/21/93	4	3	7	G45230	

Note: C-E = days from Collection to Extraction/Preparation

E-A = days from Extraction/Preparation to Analysis

C-A = days from Collection to Analysis

000005

# **HITS REPORT**

Environmental Science & Engineering,  
PROJECT NUMBER 7934090G 0201  
FIELD GROUP NABKB2B

Inc. 01/21/94 STATUS: HITS ONLY PAGE 1  
PROJECT NAME NSB KINGS BAY/ABB-ES  
LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS	STORET METHOD	2029-DP NABKB2B 18	2029-MW1 NABKB2B 10	2029-MW2 NABKB2B 11	2029-MW3 NABKB2B 12	2029-MW4 NABKB2B 13	2029-MW5 NABKB2B 14	2029-MW6 NABKB2B 15	2029-MW7 NABKB2B 16	2029-MW8 NABKB2B 17	2029-MW9 NABKB2B 51	3022-DP NABKB2B 30	3022-MW13022-MW10D NABKB2B 19	28
UNITS														
DATE		12/17/93	12/17/93	12/17/93	12/17/93	12/17/93	12/17/93	12/16/93	12/16/93	12/17/93	12/17/93	12/14/93	12/14/93	12/15/93
TIME		09:43		10:25		12:35		11:15		16:25		08:18		14:00
HYDROCARBONS, PETROLEUM (TRPH)		45501	--	--	0.32	--	--	--	--	--	--	--	--	--
MG/L		9071/9073-G												
BENZENE	UG/L	34030	1.31	--	--	--	--	--	1.98	--	1.27	--	--	--
		8020-G												
ETHYLBENZENE	UG/L	34371	1.10	--	--	--	--	--	1.50	--	1.05	--	--	--
		8020-G												
TOLUENE	UG/L	34010	1.66	--	--	--	--	--	--	--	1.53	--	--	2.21
		8020-G												
XYLENES, TOTAL	UG/L	81551	6.47	--	--	--	--	--	1.70	--	6.68	--	--	--
		CALC												
METHYL TERT BUTYL ETHER	UG/L	98676	1.72	--	--	--	1.36	--	--	5.80	1.72	--	--	--
		8020-G												
VOA, TOTAL (BTEX, T)	UG/L	97512	10.5	--	--	--	--	--	5.2	--	10.5	--	--	2.2
		CALC												
ACENAPHTHYLENE	UG/L	34200	2.48	--	--	--	6.70	--	--	--	2.56	--	--	--
		8310/3520-G												
ANTHRACENE	UG/L	34220	--	--	--	0.159	2.00	--	0.140	0.490	--	0.525	3.39	1.24
		8310/3520-G												0.449
BENZO(A) ANTHRACENE	UG/L	34526	0.004	--	--	0.010	0.096	--	0.022	0.048	--	0.049	0.046	--
		8310/3520-G												
BENZO(A) PYRENE	UG/L	34247	--	--	--	0.005	0.028	--	0.002	--	--	0.011	0.024	--
		8310/3520-G												
BENZO(B) FLUORANTHENE	UG/L	34230	0.005	0.007	0.003	0.017	0.063	--	0.029	0.079	0.003	0.108	0.069	0.013
		8310/3520-G												
BENZO(GHI) PERYLENE	UG/L	34521	0.034	--	--	--	0.157	--	0.041	0.129	0.012	0.040	0.128	--
		8310/3520-G												
BENZO(K) FLUORANTHENE	UG/L	34242	0.002	--	0.0008	0.002	0.025	--	0.002	0.008	0.0009	0.011	0.032	0.001
		8310/3520-G												
CHRYSENE	UG/L	34320	0.247	--	--	--	0.537	--	0.060	0.165	--	0.355	0.075	0.087
		8310/3520-G												0.062
DIBENZO(A, H) ANTHRACENE	UG/L	34556	--	--	--	--	0.170	--	0.003	0.016	--	0.009	0.056	0.009
		8310/3520-G												
FLUORANTHENE	UG/L	34376	0.008	0.007	0.008	0.011	0.047	0.004	0.026	0.147	0.006	0.126	0.144	0.008
		8310/3520-G												0.080
FLUORENE	UG/L	34381	1.36	--	--	1.43	1.31	--	0.806	0.372	1.21	1.09	--	0.374
		8310/3520-G												4.04
INDENO(1, 2, 3-CD) PYRENE	UG/L	34403	0.010	--	--	--	0.084	--	0.019	0.072	--	0.030	0.046	--
		8310/3520-G												0.006
NAPHTHALENE	UG/L	34696	6.29	--	--	--	1.01	--	5.83	2.70	6.31	--	2.86	--
		8310/3520-G												1.38
PHENANTHRENE	UG/L	34461	--	0.092	0.080	0.324	2.84	--	0.962	1.44	--	0.538	2.01	0.126
		8310/3520-G												2.84
PYRENE	UG/L	34469	0.645	0.425	--	1.19	2.28	--	2.93	5.15	0.383	4.96	0.214	--
		8310/3520-G												0.201
2-METHYL NAPHTHALENE	UG/L	77416	--	--	--	--	2.97	--	1.68	--	--	--	--	12.3
		8310/3520-G												
1-METHYL NAPHTHALENE	UG/L	77418	--	--	--	--	2.72	--	1.55	--	--	--	--	8.57
		8310/3520-G												

**000008**

Environmental Science & Engineering, Inc. 01/21/94 STATUS: FINAL PAGE 1  
 PROJECT NUMBER 7934090G 0201 PROJECT NAME NSB KINGS BAY/ABB-ES  
 FIELD GROUP NABKB2B LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS	STORET METHOD	2029-DP NABKB2B 18	2029-MW1 NABKB2B 10	2029-MW2 NABKB2B 11	2029-MW3 NABKB2B 12	2029-MW4 NABKB2B 13	2029-MW5 NABKB2B 14	2029-MW6 NABKB2B 15	2029-MW7 NABKB2B 16	2029-MW8 NABKB2B 17	2029-MW9 NABKB2B 51	3022-DP NABKB2B 30	3022-MW13022-MW10D NABKB2B 19	
UNITS														28
DATE		12/17/93	12/17/93	12/17/93	12/17/93	12/17/93	12/17/93	12/16/93	12/16/93	12/17/93	12/17/93	12/14/93	12/14/93	
TIME			09:43	10:25	12:35	11:15	10:50	16:25	16:52	08:18	09:00		14:00	08:45
HYDROCARBONS, PETROLEUM (TRPH)	45501	<0.18	<0.18	0.32	<0.19	<0.19	<0.18	<0.19	<0.18	<0.18	<0.19	<0.20	<0.19	<0.20
MG/L	9071/9073-G													
BENZENE	34030	1.31	<1.00	<1.00	<1.00	<1.00	<1.00	1.98	<1.00	1.27	<1.00	<1.00	<1.00	<1.00
UG/L	8020-G													
CHLOROBENZENE	34301	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
UG/L	8020-G													
DICHLOROBENZENE, TOTAL	81524	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
UG/L	8020-G													
ETHYLBENZENE	34371	1.10	<1.00	<1.00	<1.00	<1.00	<1.00	1.50	<1.00	1.05	<1.00	<1.00	<1.00	<1.00
UG/L	8020-G													
TOLUENE	34010	1.66	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.53	<1.00	<1.00	<1.00	2.21
UG/L	8020-G													
XYLENES, TOTAL	81551	6.47	<1.00	<1.00	<1.00	<1.00	<1.00	1.70	<1.00	6.68	<1.00	<1.00	<1.00	<1.00
UG/L	CALC													
METHYL TERT BUTYL ETHER	98676	1.72	<1.00	<1.00	<1.00	1.36	<1.00	<1.00	5.80	1.72	<1.00	<1.00	<1.00	<1.00
UG/L	8020-G													
VOA, TOTAL(BTEX, T)	97512	10.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.2	<1.0	10.5	<1.0	<1.0	2.2
UG/L	CALC													

000012

Environmental Science & Engineering, Inc. 01/21/94 STATUS: FINAL PAGE 2  
 PROJECT NUMBER 7934090G 0201 PROJECT NAME NSB KINGS BAY/ABB-ES  
 FIELD GROUP NABKB2B LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS	STORED METHOD	2029-DP NABKB2B	2029-MW1 NABKB2B	2029-MW2 NABKB2B	2029-MW3 NABKB2B	2029-MW4 NABKB2B	2029-MW5 NABKB2B	2029-MW6 NABKB2B	2029-MW7 NABKB2B	2029-MW8 NABKB2B	2029-MW9 NABKB2B	3022-DP NABKB2B	3022-MW13022-MW10D NABKB2B	
UNITS		18	10	11	12	13	14	15	16	17	51	30	19	
DATE		12/17/93	12/17/93	12/17/93	12/17/93	12/17/93	12/17/93	12/16/93	12/16/93	12/17/93	12/17/93	12/14/93	12/14/93	
TIME		09:43	10:25	12:35	11:15	10:50	16:25	16:52	08:18	09:00	09:00	14:00	08:45	
ACENAPHTHENE UG/L	34205 8310/3520-G	<2.22	<2.22	<2.22	<2.22	<2.22	<2.22	<2.22	<2.22	<2.22	<2.22	<2.26	<2.26	<2.26
ACENAPHTHYLENE UG/L	34200 8310/3520-G	2.48	<1.47	<1.47	<1.47	6.70	<1.47	<1.47	<1.47	2.56	<1.47	<1.52	<1.52	<1.52
ANTHRACENE UG/L	34220 8310/3520-G	<0.089	<0.089	<0.089	0.159	2.00	<0.089	0.140	0.490	<0.089	0.525	3.39	1.24	0.449
BENZO(A)ANTHRACENE UG/L	34526 8310/3520-G	0.004	<0.002	<0.002	0.010	0.096	<0.002	0.022	0.048	<0.002	0.049	0.046	<0.002	<0.002
BENZO(A)PYRENE UG/L	34247 8310/3520-G	<0.001	<0.001	<0.001	0.005	0.028	<0.001	0.002	<0.001	<0.001	0.011	0.024	<0.001	<0.001
BENZO(B)FLUORANTHENE UG/L	34230 8310/3520-G	0.005	0.007	0.003	0.017	0.063	<0.001	0.029	0.079	0.003	0.108	0.069	0.013	<0.001
BENZO(GHI)PERYLENE UG/L	34521 8310/3520-G	0.034	<0.004	<0.004	<0.004	0.157	<0.004	0.041	0.129	0.012	0.040	0.128	<0.004	<0.004
BENZO(K)FLUORANTHENE UG/L	34242 8310/3520-G	0.002	<0.0004	0.0008	0.002	0.025	<0.0004	0.002	0.008	0.0009	0.011	0.032	0.001	<0.0004
CHRYSENE UG/L	34320 8310/3520-G	0.247	<0.031	<0.031	<0.031	0.537	<0.031	0.060	0.165	<0.031	0.355	0.075	0.087	0.062
DIBENZO(A,H)ANTHRACENE UG/L	34556 8310/3520-G	<0.003	<0.003	<0.003	<0.003	0.170	<0.003	0.003	0.016	<0.003	0.009	0.056	0.009	<0.003
FLUORANTHENE UG/L	34376 8310/3520-G	0.008	0.007	0.008	0.011	0.047	0.004	0.026	0.147	0.006	0.126	0.144	0.008	0.080
FLUORENE UG/L	34381 8310/3520-G	1.36	<0.247	<0.247	1.43	1.31	<0.247	0.806	0.372	1.21	1.09	<0.235	0.374	4.04
INDENO(1,2,3-CD)PYRENE UG/L	34403 8310/3520-G	0.010	<0.003	<0.003	<0.003	0.084	<0.003	0.019	0.072	<0.003	0.030	0.046	<0.003	0.006
NAPHTHALENE UG/L	34696 8310/3520-G	6.29	<0.917	<0.917	<0.917	1.01	<0.917	5.83	2.70	6.31	<0.917	2.86	<0.905	1.38
PHENANTHRENE UG/L	34461 8310/3520-G	<0.065	0.092	0.080	0.324	2.84	<0.065	0.962	1.44	<0.065	0.538	2.01	0.126	2.84
PYRENE UG/L	34469 8310/3520-G	0.645	0.425	<0.026	1.19	2.28	<0.026	2.93	5.15	0.383	4.96	0.214	<0.025	0.201
2-METHYL NAPHTHALENE UG/L	77416 8310/3520-G	<1.20	<1.20	<1.20	<1.20	2.97	<1.20	1.68	<1.20	<1.20	<1.20	<1.15	<1.15	12.3
1-METHYL NAPHTHALENE UG/L	77418 8310/3520-G	<1.24	<1.24	<1.24	<1.24	2.72	<1.24	1.55	<1.24	<1.24	<1.24	<1.47	<1.47	8.57

000013

# **CHAIN OF CUSTODY**

COOO20

Environmental Science & Engineering, Inc. 11-19-93 \*\*\* FIELD LOGSHEET \*\*\* FIELD GROUP: NABKB2B  
 PROJECT NUMBER 7934090G 0201 PROJECT NAME: NSB KINGS BAY/ABB-ES LAB COORD. JEFF SHAMIS

ESE #	SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST	
*1	TRPBLK	VP VP VP	12/ 17/93		NABKB2BV	1/22/94
*2	TRPBLK	VP VP VP	12/ 17/93		NABKB2BV	
*3	TRPBLK	VP VP VP	12/ 17/93		NABKB2BV	
*4	TRPBLK	VP VP VP	12/ 17/93		NABKB2BV	
*5	EB1	LC LC O O VP VP VP	12/ 17/93		NABKB2B	
*6	EB2	LC LC O O VP VP VP	12/ 17/93		NABKB2B	
*7	EB3	LC LC O O VP VP VP	12/ 17/93		NABKB2B	
*8	FB1	LC LC O O VP VP VP	12/ 17/93		NABKB2B	
*9	FB2	LC LC O O VP VP VP	12/ 17/93		NABKB2B	
*10	2029-MW1	LC LC O O VP VP VP	12/ 17/93	0943	NABKB2B	SILTY
*11	2029-MW2	LC LC O O VP VP VP	12/ 17/93	1025	NABKB2B	SILTY
*12	2029-MW3	LC LC O O VP VP VP	12/ 17/93	1235	NABKB2B	SILTY
*13	2029-MW4	LC LC O O VP VP VP	12/ 17/93	1115	NABKB2B	SILTY
*14	2029-MW5	LC LC O O VP VP VP	12/ 17/93	1050	NABKB2B	SILTY
*15	2029-MW6	LC LC O O VP VP VP	12/ 16/93	1626	NABKB2B	SILTY
*16	2029-MW7	LC LC O O VP VP VP	12/ 16/93	1652	NABKB2B	SILTY
*17	2029-MW8	LC LC O O VP VP VP	12/ 17/93	0818	NABKB2B	Broke one BA

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED

-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES

-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN

-PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science & Engineering, Inc.

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) VIA: REC'D BY (NAME/ORGANIZATION/DATE/TIME)

1 *Jelena Jordan ABB-ES* 12/17/93 1530 *FEDEX Michael J. SE 1/18/94 1627*  
 2   
 3

SAMPLER: Shipped on Ice? Yes/No; I anticipate shipping (#) more samples on /  
 SAMPLE CUSTODIAN: Custody Seals Used? Yes/No; If Yes, Seals Intact? Yes/No Interior Temp? *0* Deg C  
 Preservatives Audited? Yes/No Any Problems? Yes/No; If Yes, describe:

COC0021

Environmental Science & Engineering, Inc. 12-10-93 \*\*\* FIELD LOGSHEET \*\*\* FIELD GROUP: NABKB2B  
 PROJECT NUMBER 7934090G 0201 PROJECT NAME: NSB KINGS BAY/ABB-ES LAB COORD. JEFF SHAMIS

ESE #	SITE/STA HAZ?	FRACTIONS(CIRCLE) LC LC O O VP VP VP	DATE	TIME	PARAMETER LIST NABKB2B	
*5						1/22/94
*6		LC LC O O VP VP VP			NABKB2B	
*7		LC LC O O VP VP VP			NABKB2B	
*8		LC LC O O VP VP VP			NABKB2B	
*9		LC LC O O VP VP VP			NABKB2B	
*10		LC LC O O VP VP VP			NABKB2B	
*11		LC LC O O VP VP VP			NABKB2B	
*12		LC LC O O VP VP VP			NABKB2B	
*13		LC LC O O VP VP VP			NABKB2B	
*14		LC LC O O VP VP VP			NABKB2B	
*15		LC LC O O VP VP VP			NABKB2B	
*16		LC LC O O VP VP VP			NABKB2B	
*17		LC LC O O VP VP VP			NABKB2B	
*18	2029 -DP	LC LC O O VP VP VP	12/17/93		NABKB2B	
*19		LC LC O O VP VP VP			NABKB2B	
*20		LC LC O O VP VP VP			NABKB2B	
*21		LC LC O O VP VP VP			NABKB2B	

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED.  
 -CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES  
 -HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN  
 -PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science & Engineering, Inc.

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) VIA: REC'D BY (NAME/ORGANIZATION/DATE/TIME)

1 *Jedson J. Fallon ABB-ES 12/17/93 1530 FedEx Mulder Hart E3E 1/18/94 1600*  
 2   
 3

SAMPLER: Shipped on Ice? Yes/No; I anticipate shipping (#) more samples on /  
 SAMPLE CUSTODIAN: Custody Seals Used? Yes/No; If Yes Seals Intact? Yes/No Interior Temp? 2 Deg C  
 Preservatives Audited? Yes/No Any Problems? Yes/No; If Yes, describe:

CO0002

Environmental Science & Engineering, Inc. 12-10-93 \*\*\* FIELD LOGSHEET \*\*\* FIELD GROUP: NABKB2B  
 PROJECT NUMBER 7934090G 0201 PROJECT NAME: NSB KINGS BAY/ABB-ES LAB COORD. JEFF SHAMIS

ESE #	SITE/STA HAZ?	FRACTIONS(CIRCLE) LC LC 0 0 VP VP VP	DATE	TIME	PARAMETER LIST NABKB2B
*39					1/22/94
*40		LC LC 0 0 VP VP VP			NABKB2B
*41		LC LC 0 0 VP VP VP			NABKB2B
*42		LC LC 0 0 VP VP VP			NABKB2B
*43		LC LC 0 0 VP VP VP			NABKB2B
*44		LC LC 0 0 VP VP VP			NABKB2B
*45		LC LC 0 0 VP VP VP			NABKB2B
*46		LC LC LC LC 0 0 0 0 VP VP VP VP VP VP			NABKB2B
*47		LC LC LC LC 0 0 0 0 VP VP VP VP VP VP			NABKB2B
*48		LC LC 0 0 VP VP VP			NABKB2B
*49		LC LC 0 0 VP VP VP			NABKB2B
*50		LC LC 0 0 VP VP VP			NABKB2B
*51	2029-MW9	<del>LC LC LC 0 0 0 0 VP VP VP VP VP VP</del>	12/17/93	0900	NABKB2B SILTY
*52		LC LC LC LC 0 0 0 0 VP VP VP VP VP VP			NABKB2B

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED  
 -CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES  
 -HAZARD CODES: I=IGNITABLE C=CORROSIVE R=REACTIVE T=TOXIC WASTE H=OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN  
 -PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science & Engineering, Inc.

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) VIA: REC'D BY (NAME/ORGANIZATION/DATE/TIME)

1 *Jeanne J. fashion ABB-ES 12/17/93 1530 INDEX* *Jeff Shamis ESE 12/17/93 1600*  
 2  
 3

SAMPLER: Shipped on Ice? Yes/No; I anticipate shipping (#) more samples on /  
 SAMPLE CUSTODIAN: Custody Seals Used? Yes/No; If Yes, Seals Intact? Yes/No Interior Temp? 2 Deg C  
 Preservatives Audited? Yes/No Any Problems? Yes/No; If Yes, describe:

000025

**CLP-LIKE FORMS**

**BY SDG**

## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G45735

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*1221*1	W	VOCS	00/00/00	00/00/00	12/21/93
ICV1	ICV*1221*1	W	VOCS	00/00/00	00/00/00	12/21/93
SP1	SP1*1221*1	W	VOCS	00/00/00	00/00/00	12/21/93
TRPBLK	NABKB2B*1	W	VOCS	12/17/93	12/18/93	12/21/93
AA	NABKB2B*10	W	VOCS	12/17/93	12/18/93	12/21/93
AB	NABKB2B*11	W	VOCS	12/17/93	12/18/93	12/21/93
AC	NABKB2B*12	W	VOCS	12/17/93	12/18/93	12/21/93
AD	NABKB2B*13	W	VOCS	12/17/93	12/18/93	12/21/93
AE	NABKB2B*14	W	VOCS	12/17/93	12/18/93	12/21/93
AF	NABKB2B*15	W	VOCS	12/16/93	12/18/93	12/21/93
AG	NABKB2B*16	W	VOCS	12/16/93	12/18/93	12/21/93
AH	NABKB2B*17	W	VOCS	12/17/93	12/18/93	12/22/93
2029-DP	NABKB2B*18	W	VOCS	12/17/93	12/18/93	12/22/93
AI	NABKB2B*51	W	VOCS	12/17/93	12/18/93	12/22/93
AIMS	SPM1*BKB2B51	W	VOCS	12/17/93	12/18/93	12/22/93
AIMSD	SPM2*BKB2B51	W	VOCS	12/17/93	12/18/93	12/22/93
CCS1	CCS*1221*1	W	VOCS	00/00/00	00/00/00	12/22/93

Comments:

CROSS REFERENCE TABLE FOR SDG: G45735 13:16:55 20 JAN 1994

THIS SDG INCLUDES THE FOLLOWING BATCHES :  
G45735

PRINTED BY : JEFF SHAMIS

ABBREVIATION COMPLETE NAME

AA	2029-MW1
AB	2029-MW2
AC	2029-MW3
AD	2029-MW4
AE	2029-MW5
AF	2029-MW6
AG	2029-MW7
AH	2029-MW8
AI	2029-MW9

## **QC SUMMARY DATA**

Client ID

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

AIMS

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45735

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC #	QC LIMITS REC.
BENZENE _____	20.0	0.	18.3	91.5	69-127
TOLUENE _____	20.0	0.	19.4	97.0	80 119
CHLOROBENZENE _____	20.0	0.	19.2	96.0	
ETHYLBENZENE _____	20.0	0.	20.2	101.0	

COMPOUND	SPIKE ADDED	MSD CONCENTRATION	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
BENZENE _____	20.0	18.9	94.5	3.2	29	68-126
TOLUENE _____	20.0	20.3	101.5	4.5	19.	79 118
CHLOROBENZENE _____	20.0	19.4	97.0	1.0		
ETHYLBENZENE _____	20.0	20.7	103.5	2.4		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENT:

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G45735

Lab Sample ID: MB\*1221\*1

Lab File ID:

Matrix: (soil/water) WATER

Instrument ID:

Date Analyzed : 12/21/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
TRPBLK	NABKB2B*1	12/21/93
AA	NABKB2B*10	12/21/93
AB	NABKB2B*11	12/21/93
AC	NABKB2B*12	12/21/93
AD	NABKB2B*13	12/21/93
AE	NABKB2B*14	12/21/93
AF	NABKB2B*15	12/21/93
AG	NABKB2B*16	12/21/93
AH	NABKB2B*17	12/22/93
2029-DP	NABKB2B*18	12/22/93
AI	NABKB2B*51	12/22/93
AIMS	SPM1*NABKB2B*51	12/22/93
AIMSD	SPM2*NABKB2B*51	12/22/93

COMMENTS:

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FORM IV ESE

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SURROGATE RECOVERIES

Lab Name: ESE

Contract: 7934090G

SDG No.: G45735

Analyte: FLUOROBENZENE, PID

Limits: 60-140

Client Sample ID	Recv
TRPBLK	101
AA	97
AB	98
AC	95
AD	102
AE	97
AF	90
AG	98
AH	97
2029-DP	97
AI	94
AIMS	99
AIMSD	98

\* Values outside of QC limits

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FORM VI ESE

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## **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

TRPBLK

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/21/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AA

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*10

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/21/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

## ANALYSIS DATA SHEET

Client ID

AB

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*11

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/21/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AC

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*12

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/21/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

## ANALYSIS DATA SHEET

Client ID

AD

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*13

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/21/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.36
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE,T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AE

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*14

Sample wt/vol: . Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/21/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AF

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*15

Sample wt/vol: . Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/21/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.98
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.50
	M-AND/OR-P-XYLENE (UG/L) _____	1.70
95-47-6	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
100-41-4	M-XYLENE (UG/L) _____	NA.
25321-22-6	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AG

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*16

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/21/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	5.80
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

CO0072

## ANALYSIS DATA SHEET

Client ID

AH

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45735

Matrix: (soil/water) WATER

Lab Sample ID: NABKB2B\*17

Sample wt/vol: .

Lab File ID:

%Moisture: pH:

Dilution Factor: 1.00

Date Analyzed: 12/22/93

Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.72
71-43-2	BENZENE (UG/L) _____	1.27
108-88-3	TOLUENE (UG/L) _____	1.53
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.05
	M-AND/OR-P-XYLENE (UG/L) _____	3.08
95-47-6	O-XYLENE, T, (UG/L) _____	3.60
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
100-41-4	M-XYLENE (UG/L) _____	NA.
25321-22-6	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

000073

## ANALYSIS DATA SHEET

Client ID

2029-DP

Lab Name: ESE Project No.: 7934090G SDG No.: G45735  
 Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*18  
 Sample wt/vol: Lab File ID:  
 %Moisture: pH: Dilution Factor: 1.00  
 Date Analyzed: 12/22/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.72
71-43-2	BENZENE (UG/L) _____	1.31
108-88-3	TOLUENE (UG/L) _____	1.66
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.10
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	2.90
100-41-4	O-XYLENE, T, (UG/L) _____	3.57
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

CO0074

## ANALYSIS DATA SHEET

Client ID

AI

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*51

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/22/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
---------	----------	---

1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00	U
71-43-2	BENZENE (UG/L) _____	1.00	U
108-88-3	TOLUENE (UG/L) _____	1.00	U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00	U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00	U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00	U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00	U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.	
25321-22-6	M-XYLENE (UG/L) _____	NA.	
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00	U

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FORM I ESE

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# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: MB\*1221\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/21/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	1.00 U
25321-22-6	M-XYLENE (UG/L) _____	1.00 U
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00

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FORM I ESE

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Client ID

## ANALYSIS DATA SHEET

AIMS

Lab Name: ESE Project No.: 7934090G SDG No.: G45735  
 Matrix: (soil/water) WATER Lab Sample ID: SPM1\*NABKB2B\*51  
 Sample wt/vol: . Lab File ID:  
 %Moisture: pH: Dilution Factor: 1.00  
 Date Analyzed: 12/22/93 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	18.7
108-88-3	TOLUENE (UG/L) _____	19.8
108-90-7	CHLOROBENZENE (UG/L) _____	19.5
100-41-4	ETHYLBENZENE (UG/L) _____	20.5
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	1.00 U
25321-22-6	M-XYLENE (UG/L) _____	1.00 U
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

CO0077

Client ID

## ANALYSIS DATA SHEET

AIMSD

Lab Name: ESE Project No.: 7934090G SDG No.: G45735  
 Matrix: (soil/water) WATER Lab Sample ID: SPM2\*NABKB2B\*51  
 Sample wt/vol: Lab File ID:  
 %Moisture: pH: Dilution Factor: 1.00  
 Date Analyzed: 12/22/93 Date Received: 12/18/93

CAS NO.	COMPOUND		Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00	U
71-43-2	BENZENE (UG/L) _____	19.3	
108-88-3	TOLUENE (UG/L) _____	20.7	
108-90-7	CHLOROBENZENE (UG/L) _____	19.7	
100-41-4	ETHYLBENZENE (UG/L) _____	21.0	
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00	U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00	U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	1.00	U
25321-22-6	M-XYLENE (UG/L) _____	1.00	U
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00	

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45735

Matrix: (soil/water) WATER Lab Sample ID: SP1\*1221\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/21/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	19.0
108-88-3	TOLUENE (UG/L) _____	21.5
108-90-7	CHLOROBENZENE (UG/L) _____	19.4
100-41-4	ETHYLBENZENE (UG/L) _____	20.9
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	1.00 U
25321-22-6	M-XYLENE (UG/L) _____	1.00 U
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

000079

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45735

Analyte: METHYL-T-BUT' ETHER

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/21/93	0. 1. 2.5 5. 25. 50. 100.	0. 1368. 3608. 7300. 48848. 96728. 197288.	0.481 1.18 2.34 4.23 25.5 49.8 100.	. 5.06 5.09 5.03 5.02 5.06 5.03	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45735

Analyte: BENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/21/93	0. .99 2.475 4.95 24.75 49.5 99.	0. 5761. 14558. 31429. 184325. 378988. 760934.	0.42 1.18 2.33 4.54 24.5 49.8 99.0	. 7.02 7.04 6.99 6.99 7.01 6.99	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45735

Analyte: TOLUENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/21/93	0. 1. 2.5 5. 10. 25. 100.	0. 4864. 12780. 27716. 58502. 160528. 706618.	0.38 1.15 2.40 4.76 9.59 25.2 100.0	. 9.80 9.77 9.76 9.78 9.76 9.75	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45735

Analyte: CHLOROBENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/21/93	0. 1.02 2.55 5.1 10.2 25.5 51. 102.	0. 5820. 16302. 33922. 72704. 195396. 396564. 826242.	0.35 1.12 2.50 4.81 9.89 25.7 51.0 102.	. 12.10 12.05 12.07 12.05 12.05 12.05 12.07	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45735

Analyte: ETHYLBENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/21/93	0. 1.04 2.6 5.2 10.4 26. 104.	0. 4168. 11973. 24283. 53995. 138792. 621287.	0.26 1.05 2.54 4.88 10.5 26.0 104.	. 12.39 12.35 12.38 12.37 12.36 12.38	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45735

Analyte: M-AND/OR-P-XYLENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/21/93	0. 2. 5. 10. 20. 50. 200.	0. 8320. 22456. 51563. 114847. 300300. 1298731.	0.774 2.17 4.54 9.40 19.9 50.2 200.	. 12.75 12.70 12.74 12.71 12.71 12.73	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45735

Analyte: O-XYLENE,T,

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/21/93	0. 1.1 2.75 5.5 11. 27.5 110.	0. 3666. 10640. 21674. 49028. 137568. 580544.	0.594 1.33 2.73 4.94 10.4 27.9 110.	. 13.44 13.40 13.43 13.41 13.41 13.44	.9999

Control Limits: r = 0.995

Comments:

Client ID

REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G45735

Lab Sample ID: SP1\*1221\*1

Date Analyzed: 12/21/93

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
BENZENE	20.0	19.0		95.0	69-127
TOLUENE	20.0	21.5		107.5	80 119
CHLOROBENZENE	20.0	19.4		97.0	
ETHYLBENZENE	20.0	20.9		104.5	

Comments:

FORM V ESE

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Client ID

CALIBRATION VERIFICATION

ICV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45735

Lab Sample ID: ICV\*1221\*1

Date Analyzed: 12/21/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
MTBE	20.0	18.0		10.0	
BENZENE	20.0	20.0		0.0	
TOLUENE	20.0	21.2		6.0	
C'BENZENE	20.0	18.7		6.5	
E'BENZENE	20.0	21.0		5.0	
M,P-XYLENE	40.0	42.3		5.8	
O-XYLENE	20.0	21.2		6.0	

Comments:

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FORM VIII ESE

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## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G45531

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
ICV1	ICV*939121-B	W	PAHS	00/00/00	00/00/00	01/04/94
CCS1	CCS*939351-B	W	PAHS	00/00/00	00/00/00	01/06/94
PBLK1	MB*NONE*1	W	PAHS	00/00/00	00/00/00	01/06/94
SP1	SP1*NONE*1	W	PAHS	00/00/00	00/00/00	01/06/94
2029-DPMS	SPM1*BKB2B18	W	PAHS	12/17/93	12/18/93	01/06/94
2029-DPMSD	SPM2*BKB2B18	W	PAHS	12/17/93	12/18/93	01/06/94
2029-DP	NABKB2B*18	W	PAHS	12/17/93	12/18/93	01/06/94
AA	NABKB2B*51	W	PAHS	12/17/93	12/18/93	01/06/94
AB	NABKB2B*10	W	PAHS	12/17/93	12/18/93	01/06/94
AC	NABKB2B*11	W	PAHS	12/17/93	12/18/93	01/06/94
AD	NABKB2B*12	W	PAHS	12/17/93	12/18/93	01/06/94
AE	NABKB2B*13	W	PAHS	12/17/93	12/18/93	01/06/94
AF	NABKB2B*14	W	PAHS	12/17/93	12/18/93	01/06/94
AG	NABKB2B*15	W	PAHS	12/16/93	12/18/93	01/06/94
AH	NABKB2B*16	W	PAHS	12/16/93	12/18/93	01/06/94
AI	NABKB2B*17	W	PAHS	12/17/93	12/18/93	01/07/94
CCS2	CCS*939351-B	W	PAHS	00/00/00	00/00/00	01/07/94
CCS3	CCS*939351-B	W	PAHS	00/00/00	00/00/00	01/07/94
CCS4	CCS*939351-B	W	PAHS	00/00/00	00/00/00	01/07/94

Comments:

CROSS REFERENCE TABLE FOR SDG: G45531 12:41:13 20 JAN 1994

THIS SDG INCLUDES THE FOLLOWING BATCHES :  
G45531

PRINTED BY : JEFF SHAMIS

ABBREVIATION COMPLETE NAME

AA	2029-MW9
AB	2029-MW1
AC	2029-MW2
AD	2029-MW3
AE	2029-MW4
AF	2029-MW5
AG	2029-MW6
AH	2029-MW7
AI	2029-MW8

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# **QC SUMMARY DATA**

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Client ID

2029-DPMS

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45531

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC #	QC LIMITS REC.
NAPHTHALENE	218	0.	175	80.3	21-117
ACENAPHTHYLENE	227	0.	200	88.1	53 103
ACENAPHTHENE	231	0.	202	87.4	49 109
FLUORENE	72.0	0.	65.4	90.8	40 110
PHENANTHRENE	118	0.	103	87.3	52 116
ANTHRACENE	110	0.	90.6	82.4	44 124

COMPOUND	SPIKE ADDED	MSD CONCENTRATION	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
NAPHTHALENE	218	164	75.2	6.6	48	21-117
ACENAPHTHYLENE	227	187	82.4	6.7	25	53 103
ACENAPHTHENE	231	192	83.1	5.0	30	49 109
FLUORENE	72.0	63.1	87.6	3.6	35	40 110
PHENANTHRENE	118	106	89.8	2.8	32	52 116
ANTHRACENE	110	94.4	85.8	4.0	40	44 124

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENT:

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Client ID

2029-DPMS

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45531

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC #	QC LIMITS REC.
BENZO (K) FLUORANTHENE _____	2.36	0.	1.75	74.2	41-123
BENZO (A) PYRENE _____	4.58	0.	3.04	66.4	45 121

COMPOUND	SPIKE ADDED	MSD CONCENTRATION	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
BENZO (K) FLUORANTHENE _____	2.36	1.70	72.0	3.0	41	41-123
BENZO (A) PYRENE _____	4.58	3.03	66.2	0.3	38	45 121

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENT:

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G45531

Lab Sample ID: MB\*NONE\*1

Lab File ID:

Matrix: (soil/water) WATER

Instrument ID:

Date Analyzed : 01/06/94

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
2029-DPMSDL	SPM1*NABKB2B*18	01/06/94
2029-DPMSDL	SPM2*NABKB2B*18	01/06/94
2029-DP	NABKB2B*18	01/06/94
AA	NABKB2B*51	01/06/94
AB	NABKB2B*10	01/06/94
AC	NABKB2B*11	01/06/94
AD	NABKB2B*12	01/06/94
AE	NABKB2B*13	01/06/94
AF	NABKB2B*14	01/06/94
AG	NABKB2B*15	01/06/94
AH	NABKB2B*16	01/06/94
AI	NABKB2B*17	01/07/94

COMMENTS :

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FORM IV ESE

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SURROGATE RECOVERIES

Lab Name: ESE

Contract: 7934090G

SDG No.: G45531

Analyte: TRIPHENYLENE

Limits: 41-143

Client Sample ID	Recv
2029-DPMSDL	84
2029-DPMSSDL	85
2029-DP	89
AA	79
AB	90
AC	60
AD	75
AEDL	371
AF	19
AG	94
AH	115
AI	75

\* Values outside of QC limits

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

2029-DP

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*18

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/06/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	6.29
208-96-8	ACENAPHTHYLENE (UG/L)	2.48
90-12-0	1-METHYL NAPHTHALENE (UG/L)	1.24 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	1.20 U
83-32-9	ACENAPHTHENE (UG/L)	2.22 U
86-73-7	FLUORENE (UG/L)	1.36
85-01-8	PHENANTHRENE (UG/L)	0.065 U
120-12-7	ANTHRACENE (UG/L)	0.089 U
206-44-0	FLUORANTHENE (UG/L)	0.008
129-00-0	PYRENE (UG/L)	0.645
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.004
218-01-9	CHRYSENE (UG/L)	0.247
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.005
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	0.002
50-32-8	BENZO(A) PYRENE (UG/L)	0.001 U
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.003 U
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.034
193-39-5	INDENO(1, 2, 3-CD) PYRENE (	0.010

## ANALYSIS DATA SHEET

Client ID

AA

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*51

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/06/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
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91-20-3	NAPHTHALENE (UG/L)	0.917	U
208-96-8	ACENAPHTHYLENE (UG/L)	1.47	U
90-12-0	1-METHYL NAPHTHALENE (UG/L)	1.24	U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	1.20	U
83-32-9	ACENAPHTHENE (UG/L)	2.22	U
86-73-7	FLUORENE (UG/L)	1.09	
85-01-8	PHENANTHRENE (UG/L)	0.538	
120-12-7	ANTHRACENE (UG/L)	0.525	
206-44-0	FLUORANTHENE (UG/L)	0.126	
129-00-0	PYRENE (UG/L)	4.96	
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.049	
218-01-9	CHRYSENE (UG/L)	0.355	
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.108	
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	0.011	
50-32-8	BENZO(A) PYRENE (UG/L)	0.011	
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.009	
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.040	
193-39-5	INDENO(1, 2, 3-CD) PYRENE (	0.030	

Client ID

## ANALYSIS DATA SHEET

AB

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*10

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/06/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	0.917
208-96-8	ACENAPHTHYLENE (UG/L)	1.47
90-12-0	1-METHYL NAPHTHALENE (UG/L)	1.24
91-57-6	2-METHYL NAPHTHALENE (UG/L)	1.20
83-32-9	ACENAPHTHENE (UG/L)	2.22
86-73-7	FLUORENE (UG/L)	0.247
85-01-8	PHENANTHRENE (UG/L)	0.092
120-12-7	ANTHRACENE (UG/L)	0.089
206-44-0	FLUORANTHENE (UG/L)	0.007
129-00-0	PYRENE (UG/L)	0.425
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.002
218-01-9	CHRYSENE (UG/L)	0.031
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.007
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	0.0004
50-32-8	BENZO(A) PYRENE (UG/L)	0.001
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.003
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.004
193-39-5	INDENO(1,2,3-CD) PYRENE (	0.003

Client ID

## ANALYSIS DATA SHEET

AC

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45531

Matrix: (soil/water) WATER

Lab Sample ID: NABKB2B\*11

Sample wt/vol: 1000.

Lab File ID:

%Moisture: pH:

Dilution Factor: 1.00

Date Analyzed: 01/06/94

Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-1	NAPHTHALENE (UG/L)	0.917 U
208-96-0	ACENAPHTHYLENE (UG/L)	1.47 U
90-12-0	1-METHYL NAPHTHALENE (UG/L)	1.24 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	1.20 U
83-32-9	ACENAPTHENE (UG/L)	2.22 U
86-73-7	FLUORENE (UG/L)	0.247 U
85-01-8	PHENANTHRENE (UG/L)	0.080
120-12-7	ANTHRACENE (UG/L)	0.089 U
206-44-0	FLUORANTHENE (UG/L)	0.008
129-00-0	PYRENE (UG/L)	0.026 U
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.002 U
218-01-9	CHRYSENE (UG/L)	0.031 U
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.003
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	0.0008
50-32-8	BENZO(A) PYRENE (UG/L)	0.001 U
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.003 U
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.004 U
193-39-5	INDENO(1, 2, 3-CD) PYRENE (	0.003 U

Client ID

## ANALYSIS DATA SHEET

AD

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*12

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/06/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	0.917 U
208-96-8	ACENAPHTHYLENE (UG/L)	1.47 U
90-12-0	1-METHYL NAPHTHALENE (UG/L)	1.24 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	1.20 U
83-32-9	ACENAPHTHENE (UG/L)	2.22 U
86-73-7	FLUORENE (UG/L)	1.43
85-01-8	PHENANTHRENE (UG/L)	0.324
120-12-7	ANTHRACENE (UG/L)	0.159
206-44-0	FLUORANTHENE (UG/L)	0.011
129-00-0	PYRENE (UG/L)	1.19
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.010
218-01-9	CHRYSENE (UG/L)	0.031 U
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.017
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	0.002
50-32-8	BENZO(A) PYRENE (UG/L)	0.005
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.003 U
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.004 U
193-39-5	INDENO(1, 2, 3-CD) PYRENE (	0.003 U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AE

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*13

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/06/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	1.01
208-96-8	ACENAPHTHYLENE (UG/L)	6.70
90-12-0	1-METHYL NAPHTHALENE (UG/L)	2.72
91-57-6	2-METHYL NAPHTHALENE (UG/L)	2.97
83-32-9	ACENAPHTHENE (UG/L)	2.22
86-73-7	FLUORENE (UG/L)	1.31
85-01-8	PHENANTHRENE (UG/L)	2.84
120-12-7	ANTHRACENE (UG/L)	2.00
206-44-0	FLUORANTHENE (UG/L)	0.047
129-00-0	PYRENE (UG/L)	2.28
56-55-3	BENZO(A)ANTHRACENE (UG/L)	0.096
218-01-9	CHRYSENE (UG/L)	0.537
205-99-2	BENZO(B)FLUORANTHENE (UG/L)	0.063
207-08-9	BENZO(K)FLUORANTHENE (UG/L)	0.025
50-32-8	BENZO(A)PYRENE (UG/L)	0.028
53-70-3	DIBEN'(A,H)ANTH'CENE (UG/L)	0.170
191-24-2	BENZO(GHI)PERYLENE (UG/L)	0.157
193-39-5	INDENO(1,2,3-CD) PYRENE (	0.084

U

## ANALYSIS DATA SHEET

Client ID

AE

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*13

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 20.0

Date Analyzed: 01/06/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	1.01
208-96-8	ACENAPHTHYLENE (UG/L)	6.70
90-12-0	1-METHYL NAPHTHALENE (UG/L)	2.72
91-57-6	2-METHYL NAPHTHALENE (UG/L)	2.97
83-32-9	ACENAPHTHENE (UG/L)	2.22
86-73-7	FLUORENE (UG/L)	1.31
85-01-8	PHENANTHRENE (UG/L)	2.84
120-12-7	ANTHRACENE (UG/L)	2.00
206-44-0	FLUORANTHENE (UG/L)	0.047
129-00-0	PYRENE (UG/L)	2.28
56-55-3	BENZO (A) ANTHRACENE (UG/L)	0.096
218-01-9	CHRYSENE (UG/L)	0.537
205-99-2	BENZO (B) FLUORANTHENE (UG/L)	0.063
207-08-9	BENZO (K) FLUORANTHENE (UG/L)	0.025
50-32-8	BENZO (A) PYRENE (UG/L)	0.028
53-70-3	DIBEN' (A, H) ANTH'CENE (UG/L)	0.170
191-24-2	BENZO (GHI) PERYLENE (UG/L)	0.157
193-39-5	INDENO (1, 2, 3-CD) PYRENE (	0.084

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AF

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45531

Matrix: (soil/water) WATER

Lab Sample ID: NABKB2B\*14

Sample wt/vol: 1000.

Lab File ID:

%Moisture: pH:

Dilution Factor: 1.00

Date Analyzed: 01/06/94

Date Received: 12/18/93

CAS NO.

COMPOUND

Q

91-20-3	NAPHTHALENE (UG/L)	0.917	U
208-96-8	ACENAPHTHYLENE (UG/L)	1.47	U
90-12-0	1-METHYL NAPHTHALENE (UG/L)	1.24	U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	1.20	U
83-32-9	ACENAPHTHENE (UG/L)	2.22	U
86-73-7	FLUORENE (UG/L)	0.247	U
85-01-8	PHENANTHRENE (UG/L)	0.065	U
120-12-7	ANTHRACENE (UG/L)	0.089	U
206-44-0	FLUORANTHENE (UG/L)	0.004	
129-00-0	PYRENE (UG/L)	0.026	U
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.002	U
218-01-9	CHRYSENE (UG/L)	0.031	U
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.001	U
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	0.0004	U
50-32-8	BENZO(A) PYRENE (UG/L)	0.001	U
5 -70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.003	U
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.004	U
193-39-5	INDENO(1, 2, 3-CD) PYRENE (	0.003	U

## ANALYSIS DATA SHEET

Client ID

AG

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*15

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/06/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	5.83
208-96-8	ACENAPHTHYLENE (UG/L)	1.47
90-12-0	1-METHYL NAPHTHALENE (UG/L)	1.55
91-57-6	2-METHYL NAPHTHALENE (UG/L)	1.68
83-32-9	ACENAPHTHENE (UG/L)	2.22
86-73-7	FLUORENE (UG/L)	0.806
85-01-8	PHENANTHRENE (UG/L)	0.962
120-12-7	ANTHRACENE (UG/L)	0.140
206-44-0	FLUORANTHENE (UG/L)	0.026
129-00-0	PYRENE (UG/L)	2.93
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.022
218-01-9	CHRYSENE (UG/L)	0.060
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.029
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	0.002
50-32-8	BENZO(A) PYRENE (UG/L)	0.002
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.003
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.041
193-39-5	INDENO(1,2,3-CD) PYRENE (	0.019

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FORM I ESE

000196

## ANALYSIS DATA SHEET

Client ID

AH

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*16

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/06/94 Date Received: 12/18/93

ITEM NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	2.70
208-96-8	ACENAPHTHYLENE (UG/L)	1.47 U
90-12-0	1-METHYL NAPHTHALENE (UG/L)	1.24 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	1.20 U
83-32-9	ACENAPTHENE (UG/L)	2.22 U
86-73-7	FLUORENE (UG/L)	0.372
85-01-8	PHENANTHRENE (UG/L)	1.44
120-12-7	ANTHRACENE (UG/L)	0.490
206-44-0	FLUORANTHENE (UG/L)	0.147
129-00-0	PYRENE (UG/L)	5.15
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.048
218-01-9	CHRYSENE (UG/L)	0.165
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.079
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	0.008
50-32-8	BENZO(A) PYRENE (UG/L)	0.001 U
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.016
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.129
193-39-5	INDENO(1, 2, 3-CD) PYRENE (	0.072

## ANALYSIS DATA SHEET

Client ID

AI

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*17

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/07/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	6.31
208-96-8	ACENAPHTHYLENE (UG/L)	2.56
90-12-0	1-METHYL NAPHTHALENE (UG/L)	1.24 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	1.20 U
83-32-9	ACENAPHTHENE (UG/L)	2.22 U
86-73-7	FLUORENE (UG/L)	1.21
85-01-8	PHENANTHRENE (UG/L)	0.065 U
120-12-7	ANTHRACENE (UG/L)	0.089 U
206-44-0	FLUORANTHENE (UG/L)	0.006
129-00-0	PYRENE (UG/L)	0.383
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.002 U
218-01-9	CHRYSENE (UG/L)	0.031 U
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.003
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	0.0009
50-32-8	BENZO(A) PYRENE (UG/L)	0.001 U
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.003 U
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.012
193-39-5	INDENO(1,2,3-CD) PYRENE (	0.003 U

# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: MB\*NONE\*1

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/06/94 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	0.917
208-96-8	ACENAPHTHYLENE (UG/L)	1.47
90-12-0	1-METHYL NAPHTHALENE (UG/L)	1.24
91-57-6	2-METHYL NAPHTHALENE (UG/L)	1.20
83-32-9	ACENAPHTHENE (UG/L)	2.22
86-73-7	FLUORENE (UG/L)	0.247
85-01-8	PHENANTHRENE (UG/L)	0.065
120-12-7	ANTHRACENE (UG/L)	0.089
206-44-0	FLUORANTHENE (UG/L)	0.002
129-00-0	PYRENE (UG/L)	0.026
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.002
218-01-9	CHRYSENE (UG/L)	0.031
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.001
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	0.0004
50-32-8	BENZO(A) PYRENE (UG/L)	0.001
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.003
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.004
193-39-5	INDENO(1,2,3-CD) PYRENE (	0.003

## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45531  
 Matrix: (soil/water) WATER Lab Sample ID: SP1\*NONE\*1  
 Sample wt/vol: 1000. Lab File ID:  
 %Moisture: pH: Dilution Factor: 1.00  
 Date Analyzed: 01/06/94 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	82.4 D
208-96-8	ACENAPHTHYLENE (UG/L)	89.9 D
90-12-0	1-METHYL NAPHTHALENE (UG/L)	0.0 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	0.0 U
83-32-9	ACENAPHTHENE (UG/L)	92.4 D
86-73-7	FLUORENE (UG/L)	29.6 D
85-01-8	PHENANTHRENE (UG/L)	47.1 D
120-12-7	ANTHRACENE (UG/L)	43.2 D
206-44-0	FLUORANTHENE (UG/L)	0.0 U
129-00-0	PYRENE (UG/L)	0.0 U
56-55-3	BENZO(A)ANTHRACENE (UG/L)	0.0 U
218-01-9	CHRYSENE (UG/L)	0.0 U
205-99-2	BENZO(B)FLUORANTHENE (UG/L)	0.0 U
207-08-9	BENZO(K)FLUORANTHENE (UG/L)	1.01 D
50-32-8	BENZO(A)PYRENE (UG/L)	1.83 D
53-70-3	DIBEN'(A,H)ANTH'CENE (UG/L)	0.0 U
191-24-2	BENZO(GHI)PERYLENE (UG/L)	0.0 U
193-39-5	INDENO(1,2,3-CD) PYRENE (	0.0 U

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FORM I ESE

000200 -

## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45531  
 Matrix: (soil/water) WATER Lab Sample ID: SP1\*NONE\*1  
 Sample wt/vol: 1000. Lab File ID:  
 %Moisture: pH: Dilution Factor: 20.0  
 Date Analyzed: 01/06/94 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	82.4 D
208-96-8	ACENAPHTHYLENE (UG/L)	89.9 D
90-12-0	1-METHYL NAPHTHALENE (UG/L)	0.0 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	0.0 U
83-32-9	ACENAPTHENE (UG/L)	92.4 D
86-73-7	FLUORENE (UG/L)	29.6 D
85-01-8	PHENANTHRENE (UG/L)	47.1 D
120-12-7	ANTHRACENE (UG/L)	43.2 D
206-44-0	FLUORANTHENE (UG/L)	0.0 U
129-00-0	PYRENE (UG/L)	0.0 U
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.0 U
218-01-9	CHRYSENE (UG/L)	0.0 U
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.0 U
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	1.01 D
50-32-8	BENZO(A) PYRENE (UG/L)	1.83 D
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.0 U
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.0 U
193-39-5	INDENO(1, 2, 3-CD) PYRENE (	0.0 U

## ANALYSIS DATA SHEET

Client ID

2029-DPMS

Lab Name: ESE Project No.: 7934090G SDG No.: G45531  
 Matrix: (soil/water) WATER Lab Sample ID: SPM1\*NABKB2B\*18  
 Sample wt/vol: 450. Lab File ID:  
 %Moisture: pH: Dilution Factor: 1.00  
 Date Analyzed: 01/06/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	181. D
208-96-8	ACENAPHTHYLENE (UG/L)	202. D
90-12-0	1-METHYL NAPHTHALENE (UG/L)	0.0 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	0.0 U
83-32-9	ACENAPHTHENE (UG/L)	202. D
86-73-7	FLUORENE (UG/L)	66.8 D
85-01-8	PHENANTHRENE (UG/L)	103. D
120-12-7	ANTHRACENE (UG/L)	90.6 D
206-44-0	FLUORANTHENE (UG/L)	0.0 U
129-00-0	PYRENE (UG/L)	0.0 U
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.0 U
218-01-9	CHRYSENE (UG/L)	0.0 U
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.0 U
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	1.75 D
50-32-8	F'ZO(A) PYRENE (UG/L)	3.04 D
53-70-3	D EN'(A, H) ANTH'CENE (UG/L)	0.0 U
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.0 U
193-39-5	INDENO(1,2,3-CD) PYRENE (	0.0 U

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FOR I ESE

000202-

## ANALYSIS DATA SHEET

Client ID

2029-DPMS

Lab Name: ESE Project No.: 7934090G SDG No.: G45531

Matrix: (soil/water) WATER Lab Sample ID: SPM1\*NABKB2B\*18

Sample wt/vol: 450. Lab File ID:

%Moisture: pH: Dilution Factor: 20.0

Date Analyzed: 01/06/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	181. D
208-96-8	ACENAPHTHYLENE (UG/L)	202. D
90-12-0	1-METHYL NAPHTHALENE (UG/L)	0.0 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	0.0 U
83-32-9	ACENAPHTHENE (UG/L)	202. D
86-73-7	FLUORENE (UG/L)	66.8 D
85-01-8	PHENANTHRENE (UG/L)	103. D
120-12-7	ANTHRACENE (UG/L)	90.6 D
206-44-0	FLUORANTHENE (UG/L)	0.0 U
129-00-0	PYRENE (UG/L)	0.0 U
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.0 U
218-01-9	CHRYSENE (UG/L)	0.0 U
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.0 U
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	1.75 D
50-32-8	BENZO(A) PYRENE (UG/L)	3.04 D
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.0 U
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.0 U
193-39-5	INDENO(1,2,3-CD) PYRENE (	0.0 U

## ANALYSIS DATA SHEET

Client ID

2029-DPMSD

Lab Name: ESE Project No.: 7934090G SDG No.: G45531  
 Matrix: (soil/water) WATER Lab Sample ID: SPM2\*NABKB2B\*18  
 Sample wt/vol: 450. Lab File ID:  
 %Moisture: pH: Dilution Factor: 1.00  
 Date Analyzed: 01/06/94 Date Received: 12/18/93

NO.	COMPOUND	Q
91-0-3	NAPHTHALENE (UG/L)	170. D
208-96-8	ACENAPHTHYLENE (UG/L)	189. D
90-12-0	1-METHYL NAPHTHALENE (UG/L)	0.0 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	0.0 U
83-32-9	ACENAPHTHENE (UG/L)	192. D
86-73-7	FLUORENE (UG/L)	64.5 D
85-01-8	PHENANTHRENE (UG/L)	106. D
120-12-7	ANTHRACENE (UG/L)	94.4 D
206-44-0	FLUORANTHENE (UG/L)	0.0 U
129-00-0	PYRENE (UG/L)	0.0 U
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.0 U
218-01-9	CHRYSENE (UG/L)	0.0 U
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.0 U
207-0-9	BENZO(K) FLUORANTHENE (UG/L)	1.70 D
50-3	BENZO(A) PYRENE (UG/L)	3.03 D
53-7	DIBEN'(A, H) ANTH'CENE (UG/L)	0.0 U
191-1-2	BENZO(GHI) PERYLENE (UG/L)	0.0 U
193-39-5	INDENO(1,2,3-CD) PYRENE (	0.0 U

## ANALYSIS DATA SHEET

Client ID

2029-DPMSD

Lab Name: ESE Project No.: 7934090G SDG No.: G45531  
 Matrix: (soil/water) WATER Lab Sample ID: SPM2\*NABKB2B\*18  
 Sample wt/vol: 450. Lab File ID:  
 %Moisture: pH: Dilution Factor: 20.0  
 Date Analyzed: 01/06/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
91-20-3	NAPHTHALENE (UG/L)	170. D
208-96-8	ACENAPHTHYLENE (UG/L)	189. D
90-12-0	1-METHYL NAPHTHALENE (UG/L)	0.0 U
91-57-6	2-METHYL NAPHTHALENE (UG/L)	0.0 U
83-32-9	ACENAPHTHENE (UG/L)	192. D
86-73-7	FLUORENE (UG/L)	64.5 D
85-01-8	PHENANTHRENE (UG/L)	106. D
120-12-7	ANTHRACENE (UG/L)	94.4 D
206-44-0	FLUORANTHENE (UG/L)	0.0 U
129-00-0	PYRENE (UG/L)	0.0 U
56-55-3	BENZO(A) ANTHRACENE (UG/L)	0.0 U
218-01-9	CHRYSENE (UG/L)	0.0 U
205-99-2	BENZO(B) FLUORANTHENE (UG/L)	0.0 U
207-08-9	BENZO(K) FLUORANTHENE (UG/L)	1.70 D
50-32-8	BENZO(A) PYRENE (UG/L)	3.03 D
53-70-3	DIBEN'(A, H) ANTH'CENE (UG/L)	0.0 U
191-24-2	BENZO(GHI) PERYLENE (UG/L)	0.0 U
193-39-5	INDENO(1,2,3-CD) PYRENE (	0.0 U

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FORM I ESE

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## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: NAPHTHALENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 183.36 366.72 733.44 3667.2 7334.4 18336. 36672.	0. 4706. 10184. 20835. 101137. 202164. 489798. 987323.	-37.0 138. 342. 738. 3730. 7490. 18200. 36700.	0. 9.567 9.560 9.488 9.486 9.429 9.394 9.383	1.0000
2	01/04/94	0. 183.36 366.72 733.44 3667.2 7334.4	0. 4706. 10184. 20835. 101137. 202164.	-2.75 168. 367. 753. 3670. 7330.	0. 9.57 9.56 9.49 9.49 9.43	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: ACENAPHTHYLENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 293.4 586.8 1173.6 5868. 11736. 29340. 58680.	0. 5295. 10574. 20182. 100882. 200345. 485890. 987854.	-30.6 285. 600. 1170. 5980. 11900. 28900. 58800.	0. 11.089 11.087 10.998 11.002 10.954 10.906 10.910	1.0000
2	01/04/94	0. 293.4 586.8 1173.6 5868. 11736.	0. 5295. 10574. 20182. 100882. 200345.	-18.0 292. 602. 1160. 5890. 11700.	0. 11.09 11.09 11.00 11.00 10.95	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: 1-METHYL NAPHTHALENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 248.4 496.8 993.6 4968. 9936. 24840. 49680.	0. 5746. 11206. 20799. 105241. 207355. 499079. 1010922.	-69.5 214. 483. 956. 5120. 10200. 24500. 49800.	0. 12.112 12.112 12.022 12.042 12.002 11.947 11.947	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

ab Name: ESE

SDG #: G45531

Analyte: 2-METHYL NAPHTHALENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 240.48 480.96 961.92 4809.6 9619.2 24048. 48096.	0. 5472. 10387. 19836. 99958. 194644. 473092. 952456.	-78.3 199. 448. 926. 4980. 9770. 23900. 48100.	0. 12.631 12.631 12.536 12.569 12.521 12.464 12.476	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: ACENAPHTHENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 444. 888. 1776. 8880. 17760. 44400. 88800.	0. 6339. 11946. 23931. 116451. 232131. 555783. 1082786.	-398. 121. 580. 1560. 9140. 18600. 45100. 88200.	0. 13.265 13.253 13.162 13.194 13.146 13.084 13.096	.9999
2	01/04/94	0. 444. 888. 1776. 8880. 17760.	0. 6339. 11946. 23931. 116451. 232131.	-32.1 454. 883. 1800. 8890. 17800.	0. 13.26 13.25 13.16 13.19 13.15	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: FLUORENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 49.4 98.8 197.6 988. 1976. 4940. 9880.	0. 6556. 12098. 24485. 118923. 241808. 579596. 1168198.	-13.2 42.3 89.3 194. 995. 2040. 4900. 9890.	0. 13.798 13.779 13.684 13.706 13.662 13.595 13.643	1.0000
2	01/04/94	0. 49.4 98.8 197.6 988. 1976.	0. 6556. 12098. 24485. 118923. 241808.	-.169 53.6 99.0 201. 975. 1980.	0. 13.80 13.78 13.68 13.71 13.66	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: PHENANTHRENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 13.008 26.016 52.032 260.160 520.32 1300.8 2601.6	0. 30202. 60360. 121179. 589958. 1177644. 2910021. 5930003.	1.73 15.0 28.3 55.0 261. 520. 1280. 2610.	0. 15.403 15.389 15.268 15.262 15.242 15.152 15.267	1.0000

Control Limits: r = 0.99<sup>c</sup>

Comments:

## CALIBRATION CURVES

ab Name: ESE

SDG #: G45531

Analyte: ANTHRACENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 17.784 35.568 71.136 355.68 711.36 1778.4 3556.8	0. 30813. 65313. 131631. 675900. 1331329. 3200796. 6563555.	-.299 16.5 35.2 71.3 367. 724. 1740. 3570.	0. 16.813 16.720 16.638 16.612 16.555 16.467 16.667	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: FLUORANTHENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 0.352 0.704 1.408 7.040 14.080 35.200 70.4	0. 42050. 83231. 161172. 827581. 1664768. 4064188. 8308267.	0.051 0.408 0.758 1.42 7.08 14.2 34.6 70.7	0. 18.671 18.597 18.477 18.389 18.350 18.271 18.517	.9999

Control Limit r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: PYRENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 5.2 10.4 20.8 104. 208. 520. 1040.	0. 21886. 45533. 88068. 442131. 889487. 2212607. 4414558.	.340 4.81 10.4 20.4 104. 209. 521. 1040.	0. 19.917 19.731 19.600 19.486 19.452 19.391 19.650	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: BENZO (A) ANTHRACENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 0.316 0.632 1.264 6.32 12.64 31.6 63.2	0. 41191. 83740. 162024. 797892. 1590897. 3906717. 7984706.	0.035 0.362 0.700 1.32 6.37 12.7 31.1 63.5	0. 24.320 24.066 23.870 23.677 23.610 23.657 23.907	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

ab Name: ESE

SDG #: G45531

Analyte: CHRYSENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 6.24 12.48 24.96 124.8 249.6 624. 1248.	0. 40539. 79629. 155894. 796195. 1598713. 3921625. 7905500.	-.220 6.19 12.4 24.4 126. 253. 620. 1250.	0. 25.033 24.822 24.587 24.394 24.291 24.375 24.664	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: BENZO(B)FLUORANTHENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 0.284 0.568 1.136 5.68 11.36 28.4 56.8	0. 48091. 96136. 198187. 984378. 1994573. 4910805. 9896798.	0.009 0.286 0.562 1.15 5.66 11.5 28.2 56.9	0. 28.944 28.634 28.297 28.102 27.965 28.181 28.553	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: BENZO(K) FLUORANTHENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 0.076 0.152 0.303 1.515 3.031 7.578 15.155	0. 28728. 57368. 115610. 560915. 1124175. 2753065. 5585871.	-.0004 0.078 0.156 0.314 1.53 3.06 7.49 15.2	0. 30.536 30.220 29.833 29.552 29.374 29.667 30.167	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: BENZO (A) PYRENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 0.278 0.557 1.113 5.566 11.133 27.832 55.664	0. 43485. 89235. 179421. 868494. 1751962. 4374012. 8743378.	-.005 0.272 0.563 1.14 5.52 11.1 27.8 55.7	0. 31.787 31.522 31.184 30.884 30.755 31.025 31.573	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: DIBEN' (A, H) ANTH' CENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 0.501 1.001 2.002 10.010 20.020 50.05 100.1	0. 33567. 67918. 122399. 678345. 1347802. 3298070. 6634384.	-.039 0.468 0.987 1.81 10.2 20.3 49.8 100.	0. 34.550 34.160 33.828 33.468 33.334 33.729 34.382	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45531

Analyte: BENZO(GHI) PERYLENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 0.8 1.6 3.2 16. 32. 80. 160.	0. 30139. 58475. 121402. 570095. 1154858. 2878534. 5863718.	0.194 1.02 1.79 3.51 15.8 31.8 78.9 161.	0. 35.726 35.332 34.998 34.613 34.483 34.886 35.489	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

ab Name: ESE

SDG #: G45531

Analyte: INDENO(1,2,3-CD)

PYRENE      Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/04/94	0. 0.5 1. 2. 10. 20. 50. 100.	0. 29857. 57183. 124799. 594424. 1156342. 2999051. 5894739.	-.025 0.480 0.943 2.09 10.0 19.5 50.7 99.7	0. 36.569 36.151 35.781 35.422 35.268 35.737 36.409	1.0000

Control Limits: r = 0.995

Comments:

Client ID

## REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G45531

Lab Sample ID: SP1\*NONE\*1

Date Analyzed: 01/06/94

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
NAPHTHALENE	98.0	670.	U	745.	21-117
ACENAPHTHYLENE	102.	870.	U	755.	53 103
ACENAPHTHENE	104.	880.	U	538.	49 109
FLUORENE	32.4	988.	U	049.	40 110
PHENANTHRENE	53.2	47.1		88.5	52 116
ANTHRACENE	49.5	43.2		87.3	44 124
BENZO (K) FLUORANTHENE	1.06	1.01		95.3	41 123
BENZO (A) PYRENE	2.06	1.83		88.8	45 121

Comments:

FORM V ESE

000224

Client ID

## REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G45531

Lab Sample ID: SP1\*NONE\*1

Date Analyzed: 01/06/94

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
NAPHTHALENE	98.0	670.	U	745.	21-117
ACENAPHTHYLENE	102.	870.	U	755.	53 103
ACENAPHTHENE	104.	880.	U	538.	49 109
FLUORENE	32.4	988.	U	049.	40 110
PHENANTHRENE	53.2	47.1		88.5	52 116
ANTHRACENE	49.5	43.2		87.3	44 124
BENZO (K) FLUORANTHENE	1.06	1.01		95.3	41 123
BENZO (A) PYRENE	2.06	1.83		88.8	45 121

Comments:

FORM V ESE

000225

Client ID

## CALIBRATION VERIFICATION

ICV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45531

Lab Sample ID: ICV\*939121-B5\*

Date Analyzed: 01/04/94

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
NAPHTHLENE	6200.	7100.		2.5	10
ACNAPHYL	1000.	6200.		8.5	10
1-MENAPH	8700.	9800.		1.9	10
2-MENAPH	6100.	8400.		5.0	10
ACNAPHTH	0500.	7700.		8.0	10
FLUORENE	9400.	0000.		6.4	10
PHENANTHR	2430.	2440.		0.4	10
ANTHRACEN	3520.	3440.		2.3	10
FLUORANTH	68.2	74.1		8.7	10
PYRENE	1010.	999.		1.1	10
B (A) ANTHR	61.5	63.9		3.9	10
CHRYSENE	1200.	1220.		1.7	10
B (B) FLUOR	57.8	54.4		5.9	10
B (K) FLUOR	15.2	16.2		6.6	10
B (A) PYREN	55.7	54.9		1.4	10
DB (AH) ANT	100.0	102.		2.0	10
B (GHI) PERYL	160.	163.		1.9	10
I123CDPYR	100.0	101.		1.0	10

Comments:

## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G45748

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*QC*1	W	TRPH	00/00/00	00/00/00	01/12/94
SP1	SP1*QC*1	W	TRPH	00/00/00	00/00/00	01/12/94
EB-1	NABKB2B*5	W	TRPH	12/15/93	12/16/93	01/12/94
AA	NABKB2B*10	W	TRPH	12/17/93	12/18/93	01/12/94
AB	NABKB2B*11	W	TRPH	12/17/93	12/18/93	01/12/94
AC	NABKB2B*12	W	TRPH	12/17/93	12/18/93	01/12/94
AD	NABKB2B*13	W	TRPH	12/17/93	12/18/93	01/12/94
AE	NABKB2B*14	W	TRPH	12/17/93	12/18/93	01/12/94
AF	NABKB2B*15	W	TRPH	12/16/93	12/18/93	01/12/94
AFMS	SPM1*BKB2B15	W	TRPH	12/16/93	12/18/93	01/12/94
AG	NABKB2B*16	W	TRPH	12/16/93	12/18/93	01/12/94
AH	NABKB2B*17	W	TRPH	12/17/93	12/18/93	01/12/94
2029-DP	NABKB2B*18	W	TRPH	12/17/93	12/18/93	01/12/94
AI	NABKB2B*26	W	TRPH	12/15/93	12/16/93	01/12/94
AJ	NABKB2B*27	W	TRPH	12/15/93	12/16/93	01/12/94
AK	NABKB2B*28	W	TRPH	12/15/93	12/16/93	01/12/94
AL	NABKB2B*51	W	TRPH	12/17/93	12/18/93	01/12/94
AKMS	SPM1*BKB2B28	W	TRPH	12/15/93	12/16/93	01/12/94
ICB1	ICB*THAMA*1	W	TRPH	00/00/00	00/00/00	01/12/94
ICV1	ICV*THAMA*1	W	TRPH	00/00/00	00/00/00	01/12/94
CCB1	CCB*THAMA*1	W	TRPH	00/00/00	00/00/00	01/12/94
CCV1	CCV*THAMA*1	W	TRPH	00/00/00	00/00/00	01/12/94
CCB2	CCB*THAMA*2	W	TRPH	00/00/00	00/00/00	01/12/94
CCV2	CCV*THAMA*2	W	TRPH	00/00/00	00/00/00	01/12/94

Comments:

CROSS REFERENCE TABLE FOR SDG: G45748 13:36:41 20 JAN 1994

THIS SDG INCLUDES THE FOLLOWING BATCHES :  
G45748

PRINTED BY : JEFF SHAMIS

ABBREVIATION COMPLETE NAME

AA	2029-MW1
AB	2029-MW2
AC	2029-MW3
AD	2029-MW4
AE	2029-MW5
AF	2029-MW6
AG	2029-MW7
AH	2029-MW8
AI	3022-MW8
AJ	3022-MW9
AK	3022-MW10D
AL	2029-MW9

# **QC SUMMARY DATA**

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Client ID

AFMS

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45748

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC #	QC LIMITS REC.
HYDROCARBONS, PET (TRPH)	4.69	0.	4.09	87.2	76-122

COMPOUND	SPIKE ADDED	MSD CONCENTRATION	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
					23	76-122

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENT:

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Client ID

AKMS

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45748

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC #	QC LIMITS REC.
HYDROCARBONS, PET (TRPH)	5.02	0.	3.91	77.9	76-122

COMPOUND	SPIKE ADDED	MSD CONCENTRATION	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
					23	76-122

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENT:

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G45748

Lab Sample ID: MB\*QC\*1

Lab File ID:

Matrix: (soil/water) WATER

Instrument ID:

Date Analyzed : 01/12/94

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
EB-1	NABKB2B*5	01/12/94
AA	NABKB2B*10	01/12/94
AB	NABKB2B*11	01/12/94
AC	NABKB2B*12	01/12/94
AD	NABKB2B*13	01/12/94
AE	NABKB2B*14	01/12/94
AF	NABKB2B*15	01/12/94
AFMS	SPM1*NABKB2B*15	01/12/94
AG	NABKB2B*16	01/12/94
AH	NABKB2B*17	01/12/94
2029-DP	NABKB2B*18	01/12/94
AI	NABKB2B*26	01/12/94
AJ	NABKB2B*27	01/12/94
AK	NABKB2B*28	01/12/94
AL	NABKB2B*51	01/12/94
AKMS	SPM1*NABKB2B*28	01/12/94

COMMENTS :

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FORM IV ESE

000319

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

EB-1

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*5

Sample wt/vol: 920. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/16/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.19 U

page 1 of 1

FORM I ESE

000320

## ANALYSIS DATA SHEET

Client ID

AA

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*10

Sample wt/vol: 930. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.18 U

page 1 of 1

FORM I ESE

000321

## ANALYSIS DATA SHEET

Client ID

AB

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*11

Sample wt/vol: 890. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.32

page 1 of 1

FORM I ESE

000322

## ANALYSIS DATA SHEET

Client ID

AC

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*12

Sample wt/vol: 920. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.19 U

page 1 of 1

FORM I ESE

000323

## ANALYSIS DATA SHEET

Client ID

AD

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*13

Sample wt/vol: 920. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.19 U

page 1 of 1

FORM I ESE

000324-

## ANALYSIS DATA SHEET

Client ID

AE

Lab Name: ESE Project No.: 7934090G SDG No.: G45748  
Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*14  
Sample wt/vol: 970. Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q	
61-73-4	(TRPH) (MG/L) _____	0.18	U

page 1 of 1

FORM I ESE

000325

## ANALYSIS DATA SHEET

Client ID

AF

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*15

Sample wt/vol: 910. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.19 U

page 1 of 1

FORM I ESE

000326

## ANALYSIS DATA SHEET

Client ID

AG

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*16

Sample wt/vol: 940. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.18 U

page 1 of 1

FORM I ESE

000327

## ANALYSIS DATA SHEET

Client ID

AH

Lab Name: ESE Project No.: 7934090G SDG No.: G45748  
Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*17  
Sample wt/vol: 940. Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q	
61-73-4	(TRPH) (MG/L) _____	0.18	U

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FORM I ESE

000328

## ANALYSIS DATA SHEET

Client ID

2029-DP

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*18

Sample wt/vol: 970. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.18 U

page 1 of 1

FORM I ESE

000329

## ANALYSIS DATA SHEET

Client ID

AI

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*26

Sample wt/vol: 850. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/16/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.20 U

page 1 of 1

FORM I ESE

000330

## ANALYSIS DATA SHEET

Client ID

AJ

Lab Name: ESE Project No.: 7934090G SDG No.: G45748  
Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*27  
Sample wt/vol: 890. Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 01/12/94 Date Received: 12/16/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.32

page 1 of 1

ORM I ESE

000331

## ANALYSIS DATA SHEET

Client ID

AK

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*28

Sample wt/vol: 870. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/16/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.20 U

page 1 of 1

FORM I ESE

000332-

## ANALYSIS DATA SHEET

Client ID

AL

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: NABKB2B\*51

Sample wt/vol: 920. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.19 U

page 1 of ..

FORM I ESE

000333

# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: MB\*QC\*1

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.17 U

page 1 of 1

FORM I ESE

000334

## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: SP1\*QC\*1

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	3.81

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FORM I ESE

000335

## ANALYSIS DATA SHEET

Client ID

AKMS

Lab Name: ESE Project No.: 7934090G SDG No.: G45748  
Matrix: (soil/water) WATER Lab Sample ID: SPM1\*NABKB2B\*28  
Sample wt/vol: 860. Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 01/12/94 Date Received: 12/16/93

CAS NO.	COMPOUND	Q	
61-73-4	(TRPH) (MG/L) _____	4.03	

page 1 of 1

FORM I ESE

000336

## ANALYSIS DATA SHEET

Client ID

AFMS

Lab Name: ESE Project No.: 7934090G SDG No.: G45748  
Matrix: (soil/water) WATER Lab Sample ID: SPM1\*NABKB2B\*15  
Sample wt/vol: 920. Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 01/12/94 Date Received: 12/18/93

CAS NO.	COMPOUND	Q	
61-73-4	(TRPH) (MG/L) _____	4.14	

page 1 of 1

FORM I ESE

000337

## ANALYSIS DATA SHEET

Client ID

ICB1

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: ICB\*THAMA\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	1.71 U

page 1 of 1

FORM I ESE

000338

## ANALYSIS DATA SHEET

Client ID

CCB1

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: CCB\*THAMA\*1

Sample wt/vol: . Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
---------	----------	---

61-73-4	(TRPH) (MG/L) _____	1.71	U

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FORM I ESE

000339

## ANALYSIS DATA SHEET

Client ID

CCV1

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: CCV\*THAMA\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	33.6

page 1 of 1

FORM I ESE

000340

## ANALYSIS DATA SHEET

Client ID

CCB2

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: CCB\*THAMA\*2

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	1.71 U

page 1 of 1

FORM I ESE

000341

## ANALYSIS DATA SHEET

Client ID

CCV2

Lab Name: ESE Project No.: 7934090G SDG No.: G45748

Matrix: (soil/water) WATER Lab Sample ID: CCV\*THAMA\*2

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 01/12/94 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	33.6

page 1 of 1

FORM I ESE

000342

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45748

Analyte: HYDROCARBONS, PETRO (TRPH)      Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	01/12/94	0.0 1.71 3.42 8.55 17.11 34.22 85.55	90. 88. 86. 77. 65. 46. 17.	10600. 10300. 10100. 9030. 7620. 5400. 1990.		.9999

Control Limits: r = 0.995

Comments:

Client ID

REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G45748

Lab Sample ID: SP1\*QC\*1

Date Analyzed: 01/12/94

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
HYDROCARBONS, PETRO (TRPH)	4.32	3.81		88.2	76-122

Comments:

FORM V ESE

000344

Client ID

CALIBRATION BLANKS

ICB1

Lab Name: ESE Project No.: 7934090G SDG No: G45748

Lab Sample ID: ICB\*THAMA\*1 Instrument ID:

Analyte	Conc	C	CRDL
TRPH	90		

Page 1 of 1

FORM VII ESE

000345

Client ID

CALIBRATION BLANKS

CCB1

Lab Name: ESE Project No.: 7934090G SDG No: G45748

Lab Sample ID: CCB\*THAMA\*1 Instrument ID:

Analyte	Conc	C	CRDL
TRPH	90.0		

Page 1 of 1

FORM VII ESE

000346

Client ID

CALIBRATION BLANKS

CCB2

Lab Name: ESE Project No.: 7934090G SDG No: G45748

Lab Sample ID: CCB\*THAMA\*2 Instrument ID:

Analyte	Conc	C	CRDL
TRPH	90		

Page 1 of 1

FORM VII ESE

000347

Client ID

CALIBRATION VERIFICATION

ICV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45748

Lab Sample ID: ICV\*THAMA\*1

Date Analyzed: 01/12/94

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	34.2	34.7		1.5	

Comments:

page 1 of 1

FORM VIII ESE

000348

Client ID

CALIBRATION VERIFICATION

CCV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45748

Lab Sample ID: CCV\*THAMA\*1

Date Analyzed: 01/12/94

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	34.2	33.6		1.8	

Comments:

page 1 of 1

FORM VIII ESE

000349

Client ID

CALIBRATION VERIFICATION

CCV2

Lab Name: ESE

Project No: 7934090G

SDG No: G45748

Lab Sample ID: CCV\*THAMA\*2

Date Analyzed: 01/12/94

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	34.2	33.6		1.8	

Comments:

page 1 of 1

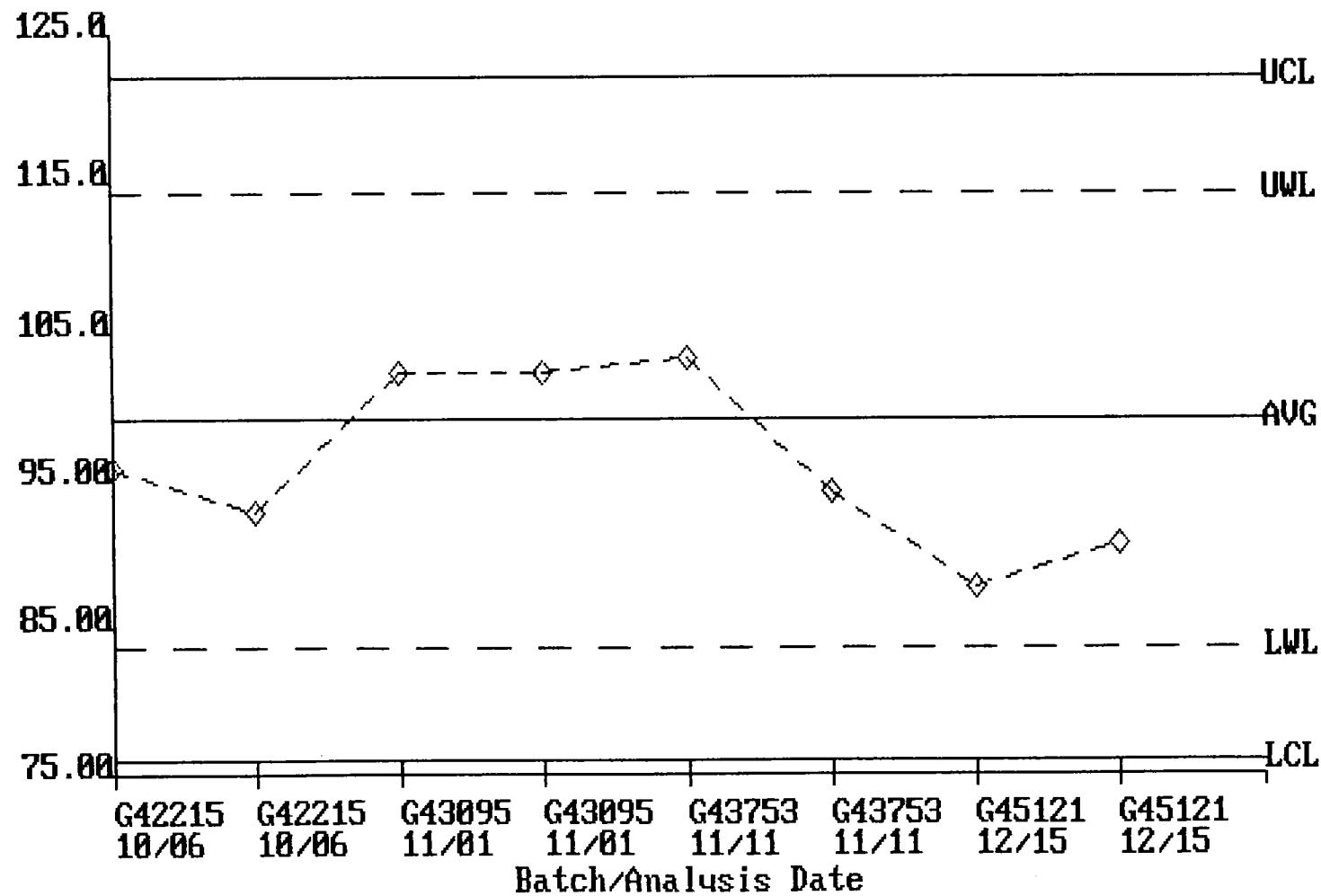
FORM VIII ESE

000350

# **CONTROL CHARTS**

ACCURACY

Standard Matrix Spike [SP] HYDROCARBONS, PETRO [TRPH], MG/L 45501\*9871/9



## Standard Matrix Spikes (SP1) HYDROCARBONS, PETRO (TPH), MG/L 45501\*9071\*9073-C

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42215	G42215*SP1*NONE*1	10/06/93	4.19	95.70	
G42215	G42215*SP2*NONE*1	10/06/93	4.19	92.80	
G43095	G43095*SP1*QC*1	11/01/93	4.19	102.10	
G43095	G43095*SP2*QC*1	11/01/93	4.19	102.10	
G43753	G43753*SP1*QC*1	11/11/93	5.00	103.20	
G43753	G43753*SP2*QC*1	11/11/93	5.00	94.20	
G45121	G45121*SP1*QC*1	12/15/93	4.24	87.70	
G45121	G45121*SP2*QC*1	12/15/93	4.24	90.60	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	AVG REC	STD DEV REC
122.01	75.99	114.34	83.66	99	7.67

LEGEND

U. = UPPER  
 L. = LOWER  
 W. = WARNING  
 REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

USE ACTIVE CONTROL LIMITS FROM STORET FILE

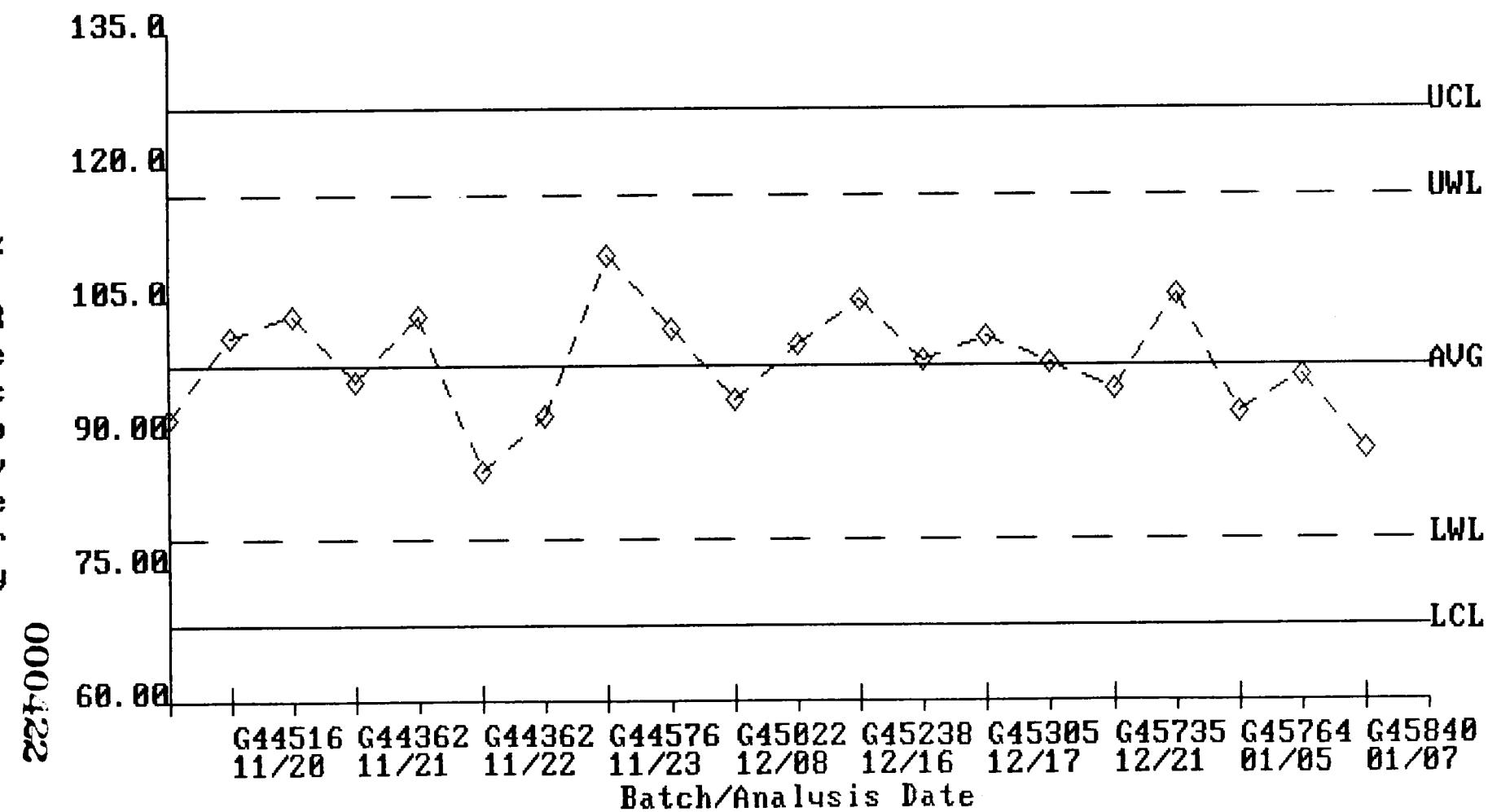
PLOT QC CHART

INCLUDE TITLE ON QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

000421

Standard Matrix Spike [SP] BENZENE, UG/L 34030\*8020-G



## Standard Matrix Spikes (SP) BENZENE, UG/L 34030\*8020-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G44453	G44453*SP1*1118*1	11/19/93	20.0	92.00	
G44516	G44516*SP1*1119*1	11/20/93	20.0	101.00	
G44106	G44106*SP1*1121*1	11/21/93	20.0	103.50	
G44362	G44362*SP1*1120*1	11/21/93	19.4	95.90	
G44569	G44569*SP1*1120*1	11/21/93	20.0	103.50	
G44362	G44362*SP1*1120*2	11/22/93	19.4	86.10	
G44363	G44363*SP1*1122*1	11/23/93	19.4	92.30	
G44576	G44576*SP1*1122*1	11/23/93	20.0	110.00	
G45001	G45001*SP1*1202*1	12/03/93	20.0	102.00	
G45022	G45022*SP1*1208*1	12/08/93	20.0	94.00	
G44965	G44965*SP1*1210*1	12/10/93	20.0	100.00	
G45238	G45238*SP1*1216*1	12/16/93	19.4	105.20	
G45238	G45238*SP1*1217*2	12/17/93	19.4	98.50	
G45305	G45305*SP1*1217*1	12/17/93	10.00	101.00	
G45177	G45177*SP1*NONE*1	12/19/93	20.0	98.00	
G45735	G45735*SP1*1221*1	12/21/93	20.0	95.00	
G45479	G45479*SP1*1227*1	12/27/93	19.4	105.70	
G45764	G45764*SP1*0104*1	01/05/94	13.6	92.60	
G45840	G45840*SP1*0106*1	01/07/94	20.0	96.50	
G45840	G45840*SP2*0106*1	01/07/94	20.0	88.50	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
126.71	68.69	117.04	78.36	97.7	9.67

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

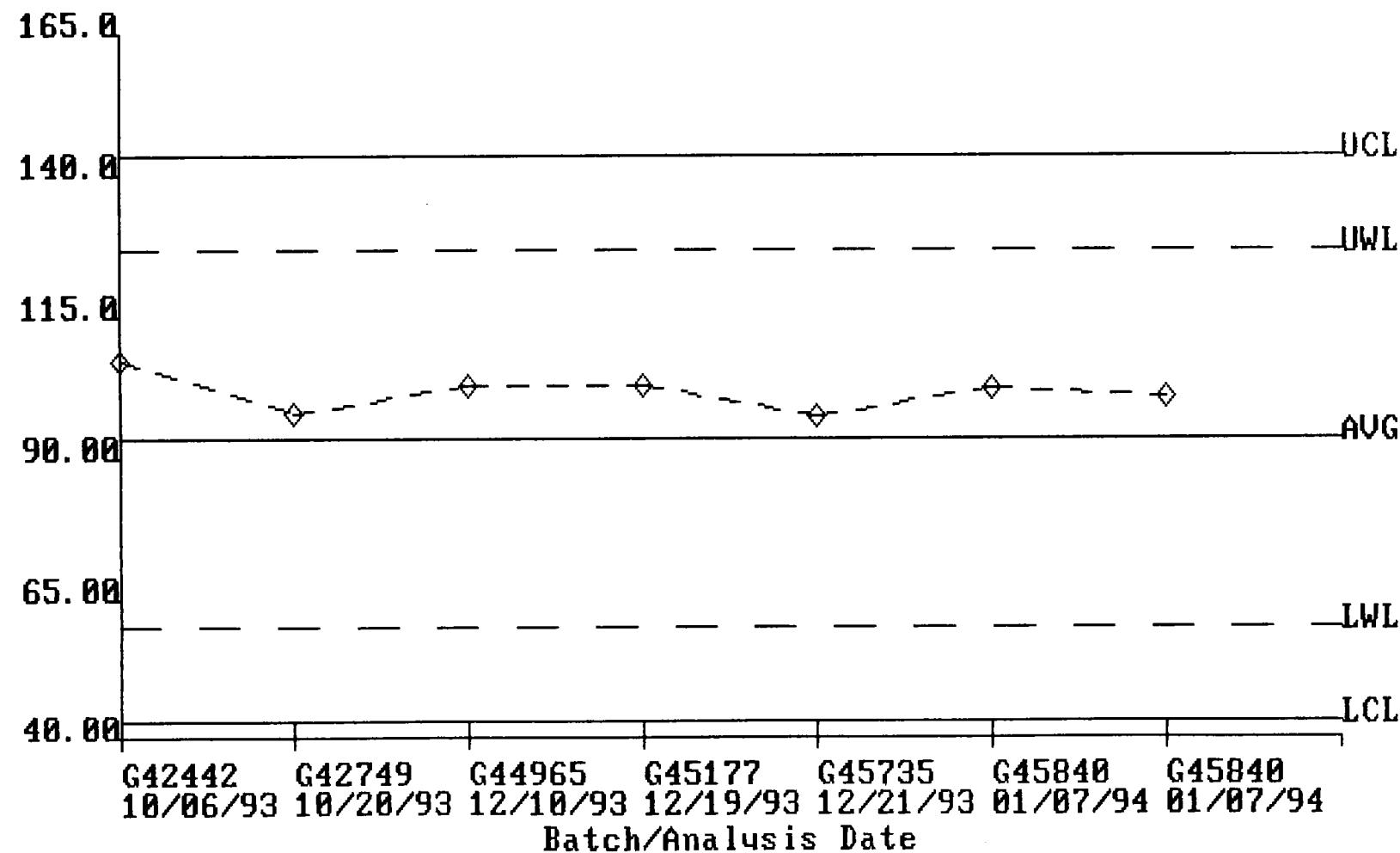
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

324000

Standard Matrix Spike [SP] CHLOROBENZENE, UG/L 34301\*8020-G



## Standard Matrix Spikes (SP) CHLOROBENZENE, UG/L 34301\*8020-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42442	G42442*SP*1005*1	10/06/93	20.0	107.00	
G42749	G42749*SP1*1019*2	10/20/93	20.0	97.50	
G44965	G44965*SP1*I210*1	12/10/93	20.0	102.50	
G5177	G5177*SP1*NONE*1	12/19/93	20.0	102.50	
G45735	G45735*SP1*I221*1	12/21/93	20.0	97.00	
G45840	G45840*SP1*0106*1	01/07/94	20.0	102.00	
G45840	G45840*SP2*0106*1	01/07/94	20.0	100.50	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	AVG REC	STD DEV REC
143.01	42.99	126.34	59.66	93	16.67

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

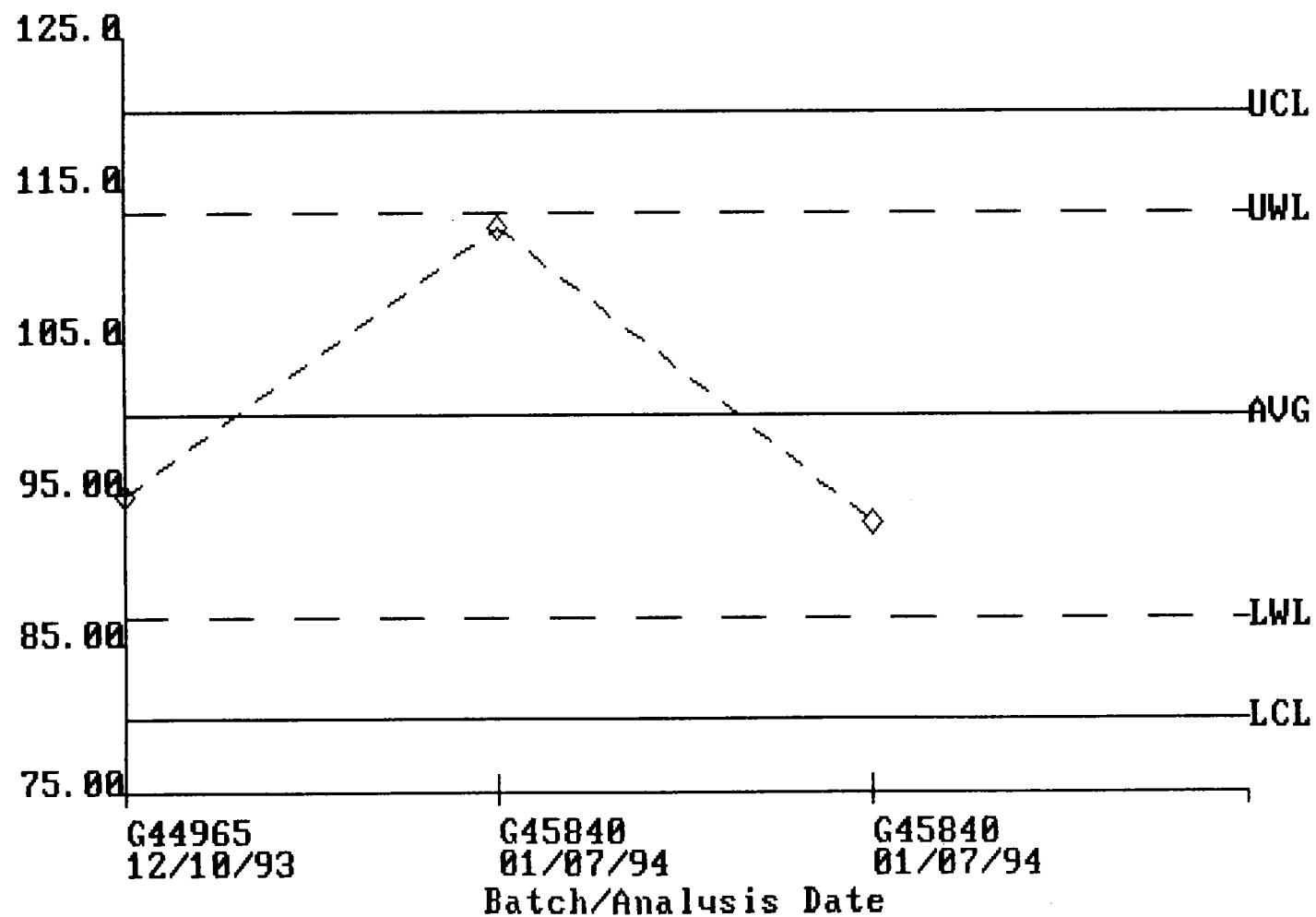
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScrн

000425

Standard Matrix Spike [SP] DICHLOROBENZENE, TOT., UG/L 81524×8020-G



## Standard Matrix Spikes (SP) DICHLOROBENZENE, TOT., UG/L 81524\*8020-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G44965	G44965*SP1*1210*1	12/10/93	60.0	94.80	
G45840	G45840*SP1*0106*1	01/07/94	60.0	112.30	
G45840	G45840*SP2*0106*1	01/07/94	60.0	93.00	
U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg Rec	Std Dev Rec
120.01	79.99	113.34	86.66	100	6.67

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

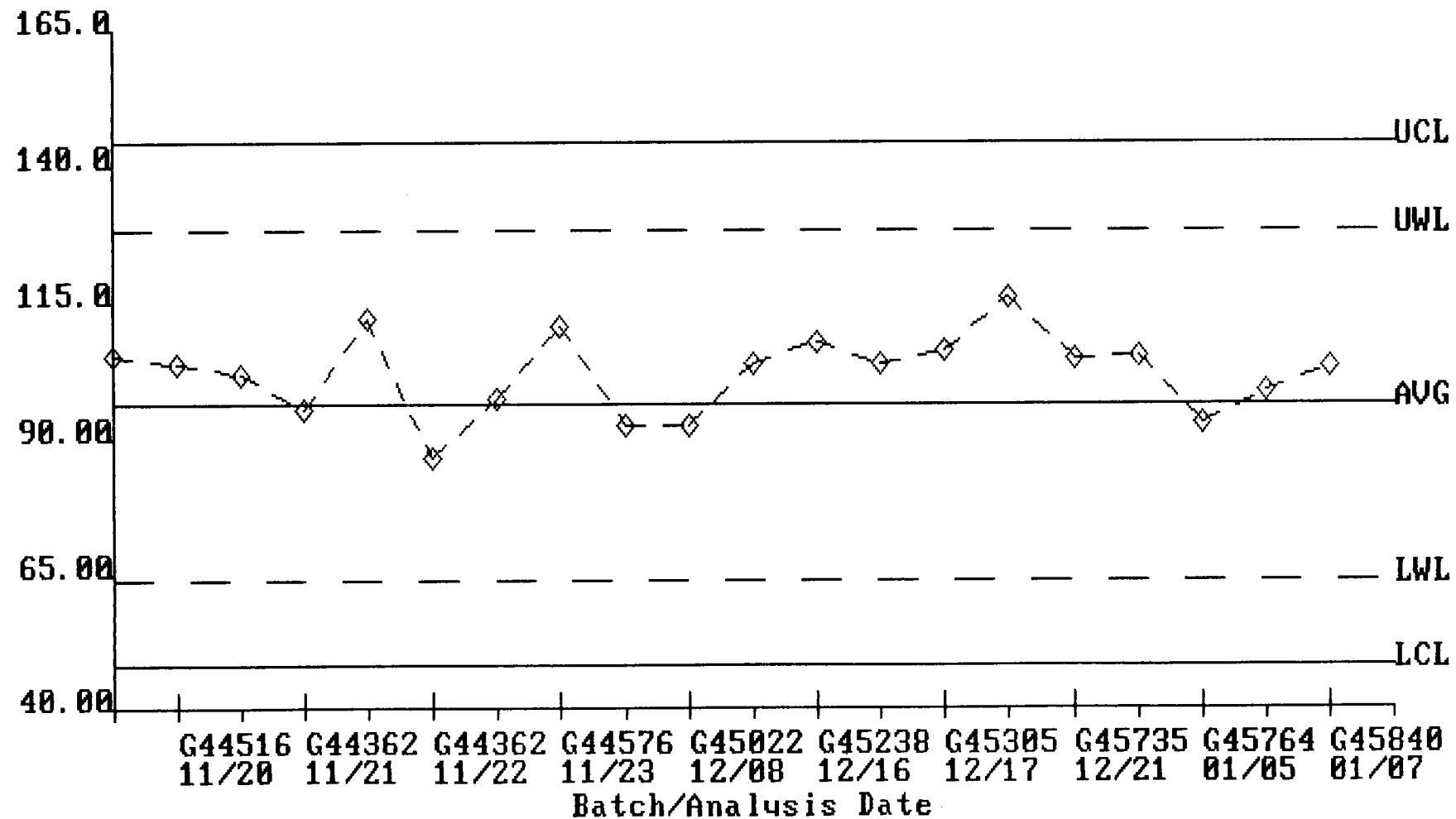
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

227-0000

Standard Matrix Spike [SP] ETHYLBENZENE, UG/L 34371\*8020-G



## Standard Matrix Spikes (SP) ETHYLBENZENE, UG/L 34371\*8020-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G44453	G44453*SP1*1118*1	11/19/93	20.0	105.00	
G44516	G44516*SP1*1119*1	11/20/93	20.0	103.50	
G44106	G44106*SP1*1121*1	11/21/93	20.0	101.50	
G44362	G44362*SP1*1120*1	11/21/93	20.0	95.00	
G44569	G44569*SP1*1120*1	11/21/93	20.0	112.00	
G44362	G44362*SP1*1120*2	11/22/93	20.0	86.50	
G44363	G44363*SP1*1122*1	11/23/93	20.0	97.00	
G44576	G44576*SP1*1122*1	11/23/93	20.0	110.50	
G45001	G45001*SP1*1202*1	12/03/93	20.0	92.00	
G45022	G45022*SP1*1208*1	12/08/93	20.0	92.00	
G44965	G44965*SP1*1210*1	12/10/93	20.0	103.50	
G45238	G45238*SP1*1216*1	12/16/93	20.0	107.50	
G45238	G45238*SP1*1217*2	12/17/93	20.0	103.50	
G45305	G45305*SP1*1217*1	12/17/93	10.00	106.00	
G45177	G45177*SP1*NONE*1	12/19/93	20.0	115.50	
G45735	G45735*SP1*1221*1	12/21/93	20.0	104.50	
G45479	G45479*SP1*1227*1	12/27/93	20.0	105.00	
G45764	G45764*SP1*0104*1	01/05/94	14.0	92.90	
G45840	G45840*SP1*0106*1	01/07/94	20.0	98.50	
G45840	G45840*SP2*0106*1	01/07/94	20.0	103.00	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	AVG REC	STD DEV REC
144	48	128	64	96	16

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

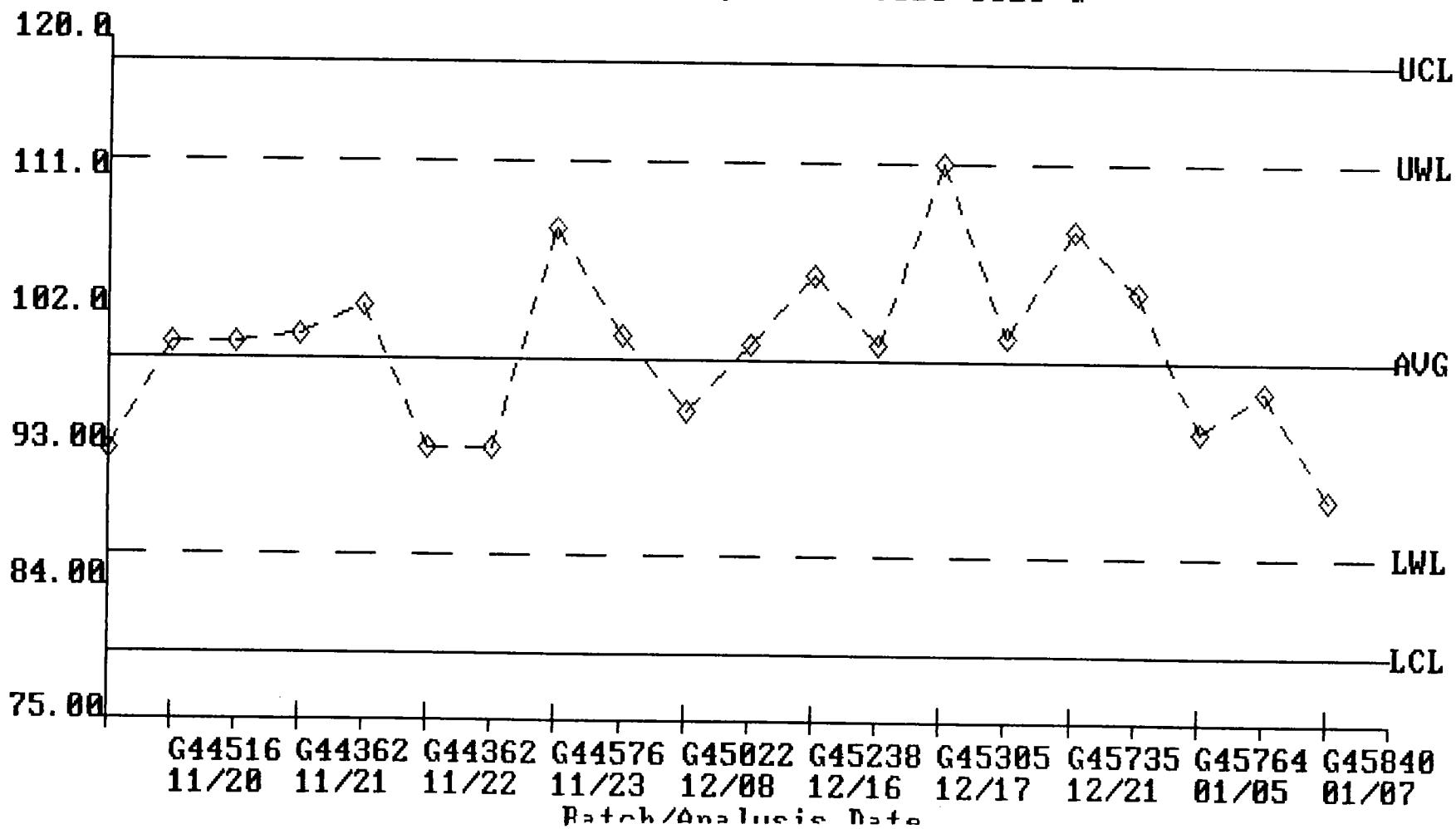
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

624-000

Standard Matrix Spike [SP] TOLUENE, UG/L 34010\*8020-G



## Standard Matrix Spikes (SP) TOLUENE, UG/L 34010\*8020-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G44453	G44453*SP1*1118*1	11/19/93	20.0	93.00	
G44516	G44516*SP1*1119*1	11/20/93	20.0	100.00	
G44106	G44106*SP1*1121*1	11/21/93	20.0	100.00	
G44362	G44362*SP1*1120*1	11/21/93	20.2	100.50	
G44569	G44569*SP1*1120*1	11/21/93	20.0	102.50	
G44362	G44362*SP1*1120*2	11/22/93	20.2	93.10	
G44363	G44363*SP1*1122*1	11/23/93	20.2	93.10	
G44576	G44576*SP1*1122*1	11/23/93	20.0	107.50	
G45001	G45001*SP1*1202*1	12/03/93	20.0	100.50	
G45022	G45022*SP1*1208*1	12/08/93	20.0	95.50	
G44965	G44965*SP1*1210*1	12/10/93	20.0	100.00	
G45238	G45238*SP1*1216*1	12/16/93	20.2	104.50	
G45238	G45238*SP1*1217*2	12/17/93	20.2	100.00	
G45305	G45305*SP1*1217*1	12/17/93	10.00	112.00	
G45177	G45177*SP1*NONE*1	12/19/93	20.0	100.50	
G45735	G45735*SP1*1221*1	12/21/93	20.0	107.50	
G45479	G45479*SP1*1227*1	12/27/93	20.2	103.50	
G45764	G45764*SP1*0104*1	01/05/94	14.1	94.30	
G45840	G45840*SP1*0106*1	01/07/94	20.0	97.00	
G45840	G45840*SP2*0106*1	01/07/94	20.0	90.00	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
118.5	79.5	112	86	99	6.5

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

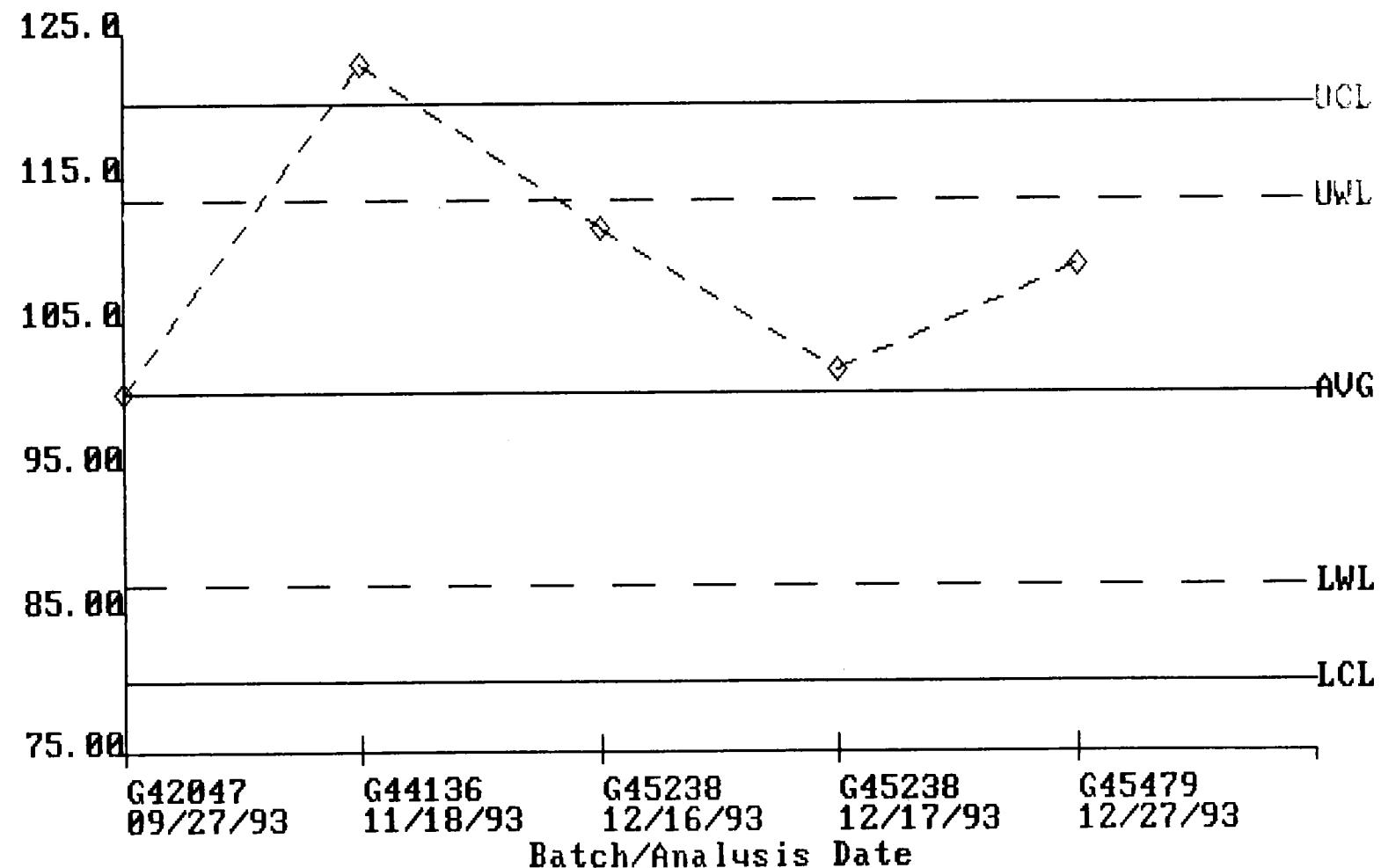
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

TER-000-131

Standard Matrix Spike [SP] METHYL-T-BUT' ETHER, UG/L 98676\*8026-G



## Standard Matrix Spikes (SP) METHYL-T-BUT'ETHER, UG/L 98676\*8020-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42047	G42047*SP1*0927*1	09/27/93	19.6	100.00	
G44136	G44136*SP1*1117B*1	11/18/93	19.4	122.70	
G45238	G45238*SP1*1216*1	12/16/93	19.4	111.30	
G45238	G45238*SP1*1217*2	12/17/93	19.4	101.50	
G45479	G45479*SP1*1227*1	12/27/93	19.4	108.80	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	AVG REC	STD DEV REC
120.001	79.999	113.334	86.666	100	6.667

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

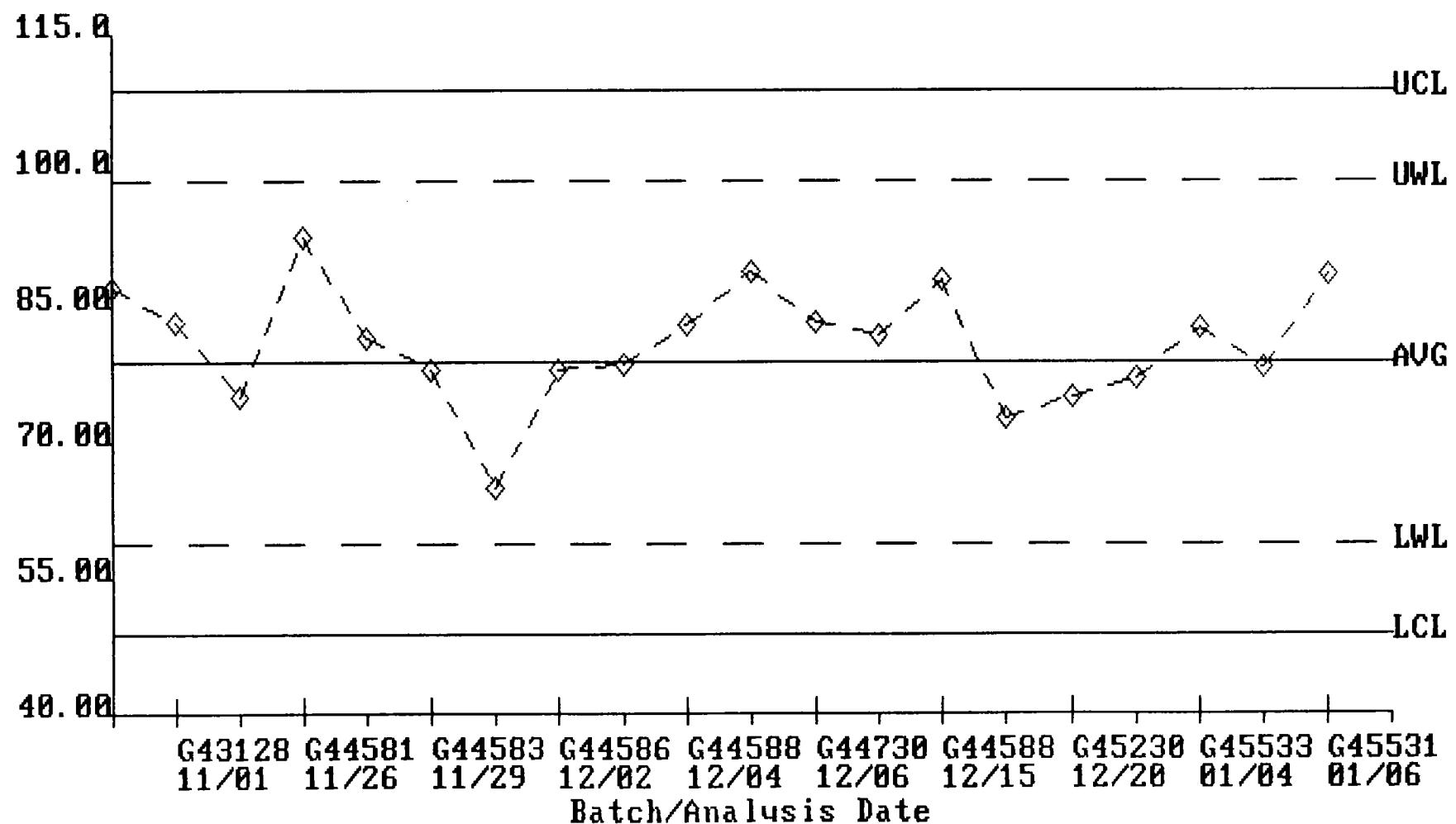
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

000433

Standard Matrix Spike [SP] ACENAPHTHENE, UG/L 34205\*8310/3528-G



## Standard Matrix Spikes (SP) ACENAPHTHENE, UG/L 34205\*8310/3520-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42196	G42196*SP1*NONE*1	10/11/93	104	87.10	
G43128	G43128*SP1*NONE*1	11/01/93	104	83.50	
G44580	G44580*SP1*NONE*1	11/25/93	104	75.20	
G44581	G44581*SP1*NONE*1	11/26/93	104	92.80	
G44582	G44582*SP1*NONE*1	11/27/93	104	81.50	
G44583	G44583*SP1*NONE*1	11/29/93	104	78.10	
G44584	G44584*SP1*NONE*1	11/30/93	104	65.00	
G44586	G44586*SP1*NONE*1	12/02/93	104	78.00	
G44587	G44587*SP1*NONE*1	12/03/93	104	78.80	
G44588	G44588*SP1*NONE*1	12/04/93	104	83.00	
G44589	G44589*SP1*NONE*1	12/05/93	104	89.10	
G44730	G44730*SP1*NONE*1	12/06/93	104	83.30	
G44731	G44731*SP1*NONE*1	12/07/93	104	81.90	
G44588	G44588*SP1*NONE*2	12/15/93	104	88.10	
G45176	G45176*SP1*NONE*1	12/19/93	104	72.70	
G45230	G45230*SP1*NONE*1	12/20/93	104	75.10	
G45303	G45303*SP1*NONE*1	12/21/93	104	77.20	
G45533	G45533*SP1*NONE*1	01/04/94	104	82.80	
G45532	G45532*SP1*NONE*1	01/05/94	104	78.40	
G45531	G45531*SP1*NONE*1	01/06/94	104	88.80	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
109	49	99	59	79	10

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

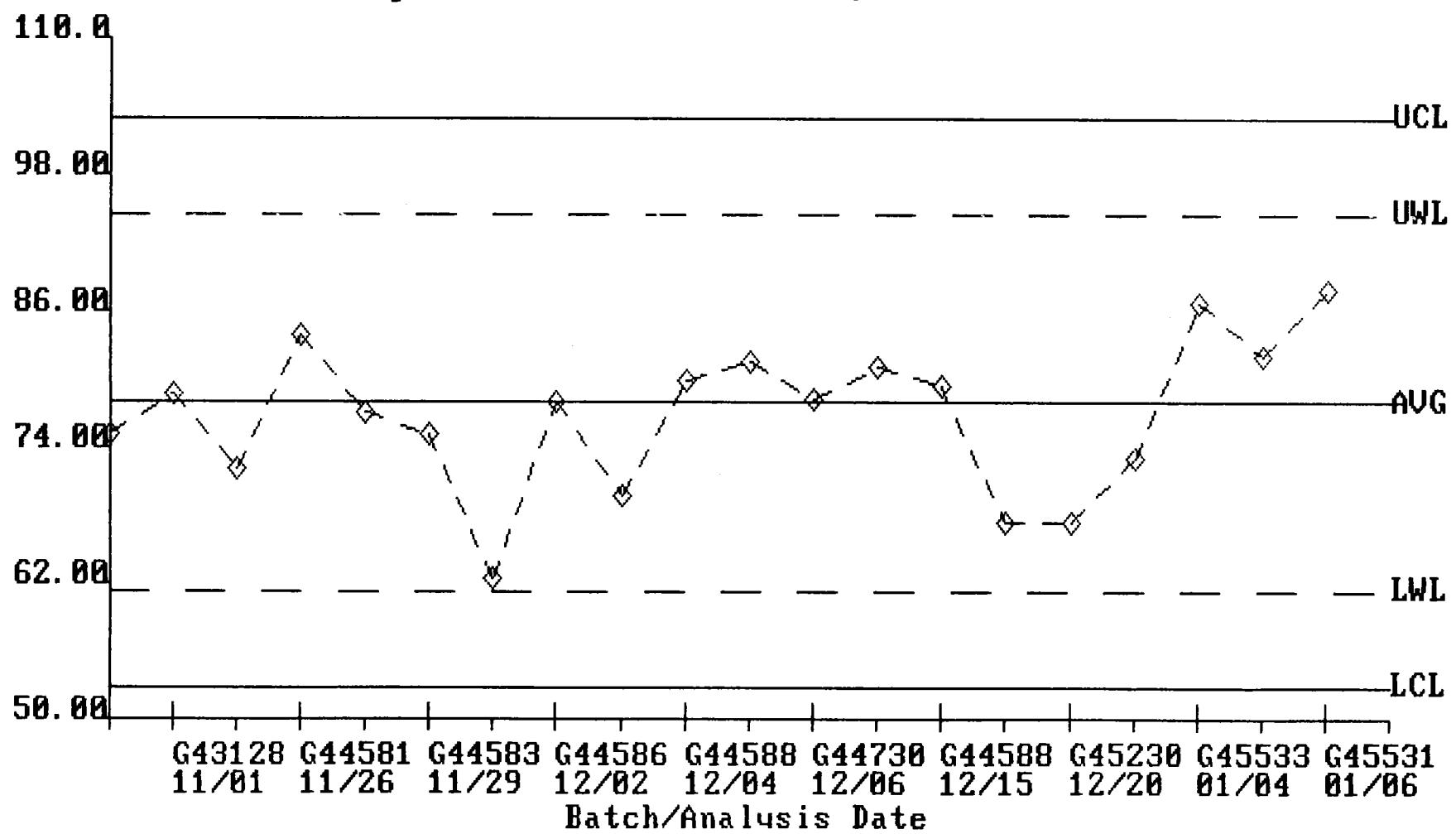
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

000435

Standard Matrix Spike [SP] ACENAPHTHYLENE, UG/L 34200\*8310/3520-G



## Standard Matrix Spikes (SP) ACENAPHTHYLENE, UG/L 34200\*8310/3520-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42196	G42196*SP1*NONE*1	10/11/93	102	75.40	
G43128	G43128*SP1*NONE*1	11/01/93	102	78.90	
G44580	G44580*SP1*NONE*1	11/25/93	102	72.20	
G44581	G44581*SP1*NONE*1	11/26/93	102	83.90	
G44582	G44582*SP1*NONE*1	11/27/93	102	77.20	
G44583	G44583*SP1*NONE*1	11/29/93	102	75.30	
G44584	G44584*SP1*NONE*1	11/30/93	102	62.50	
G44586	G44586*SP1*NONE*1	12/02/93	102	78.00	
G44587	G44587*SP1*NONE*1	12/03/93	102	69.90	
G44588	G44588*SP1*NONE*1	12/04/93	102	80.00	
G44589	G44589*SP1*NONE*1	12/05/93	102	81.60	
G44730	G44730*SP1*NONE*1	12/06/93	102	78.30	
G44731	G44731*SP1*NONE*1	12/07/93	102	81.20	
G44588	G44588*SP1*NONE*2	12/15/93	102	79.60	
G45176	G45176*SP1*NONE*1	12/19/93	102	67.50	
G45230	G45230*SP1*NONE*1	12/20/93	102	67.50	
G45303	G45303*SP1*NONE*1	12/21/93	102	73.20	
G45533	G45533*SP1*NONE*1	01/04/94	102	86.90	
G45532	G45532*SP1*NONE*1	01/05/94	102	82.00	
G45531	G45531*SP1*NONE*1	01/06/94	102	88.10	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
102.999	53.001	94.666	61.334	78	8.333

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

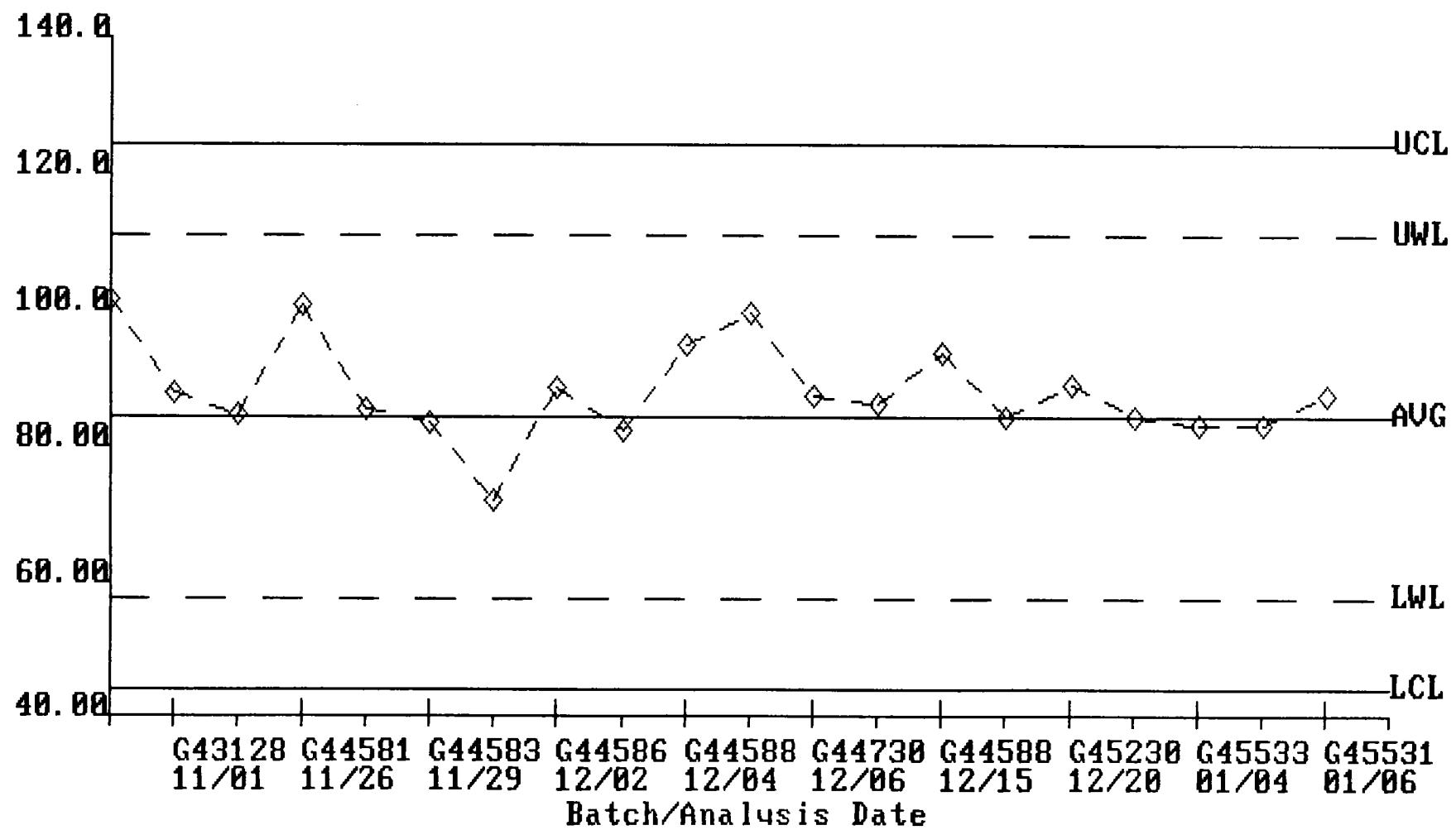
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

25+000

Standard Matrix Spike [SP] ANTHRACENE, UG/L 34220\*8310/3520-6



## Standard Matrix Spikes (SP) ANTHRACENE, UG/L 34220\*8310/3520-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42196	G42196*SP1*NONE*1	10/11/93	49.5	101.40	
G43128	G43128*SP1*NONE*1	11/01/93	49.5	87.50	
G44580	G44580*SP1*NONE*1	11/25/93	49.5	84.60	
G44581	G44581*SP1*NONE*1	11/26/93	49.5	100.60	
G44582	G44582*SP1*NONE*1	11/27/93	49.5	85.30	
G44583	G44583*SP1*NONE*1	11/29/93	49.5	83.20	
G44584	G44584*SP1*NONE*1	11/30/93	49.5	71.90	
G44586	G44586*SP1*NONE*1	12/02/93	49.5	88.30	
G44587	G44587*SP1*NONE*1	12/03/93	49.5	82.20	
G44588	G44588*SP1*NONE*1	12/04/93	49.5	94.70	
G44589	G44589*SP1*NONE*1	12/05/93	49.5	99.60	
G44730	G44730*SP1*NONE*1	12/06/93	49.5	87.10	
G44731	G44731*SP1*NONE*1	12/07/93	49.5	85.90	
G44588	G44588*SP1*NONE*2	12/15/93	49.5	93.70	
G45176	G45176*SP1*NONE*1	12/19/93	49.5	84.20	
G45230	G45230*SP1*NONE*1	12/20/93	49.5	88.90	
G45303	G45303*SP1*NONE*1	12/21/93	49.5	84.20	
G45533	G45533*SP1*NONE*1	01/04/94	49.5	83.00	
G45532	G45532*SP1*NONE*1	01/05/94	49.5	83.00	
G45531	G45531*SP1*NONE*1	01/06/94	49.5	87.30	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	AVG REC	STD DEV REC
123.999	44.001	110.666	57.334	84	13.333

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

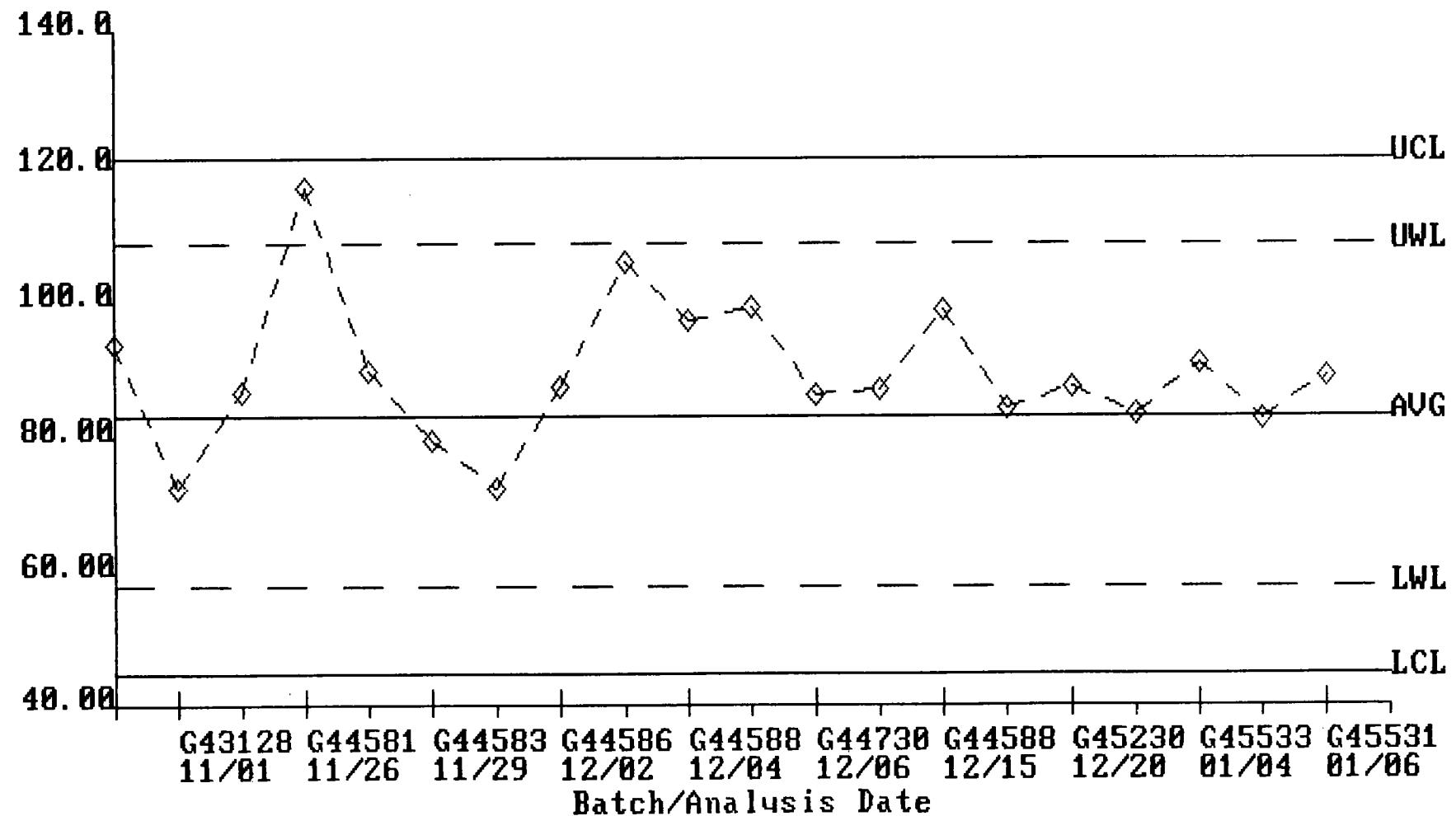
USE ACTIVE CONTROL LIMITS FROM STORED FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

651-000

Standard Matrix Spike [SP] BENZO[A]PYRENE, UG/L 34247\*8310/3520-G



Standard Matrix Spikes (SP) BENZO(A)PYRENE, UG/L 34247*8310/3520-G					
BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42196	G42196*SP1*NONE*1	10/11/93	2.06	93.70	
G43128	G43128*SP1*NONE*1	11/01/93	2.06	72.30	
G44580	G44580*SP1*NONE*1	11/25/93	2.06	86.40	
G44581	G44581*SP1*NONE*1	11/26/93	2.06	116.50	
G44582	G44582*SP1*NONE*1	11/27/93	2.06	89.80	
G44583	G44583*SP1*NONE*1	11/29/93	2.06	79.60	
G44584	G44584*SP1*NONE*1	11/30/93	2.06	72.30	
G44586	G44586*SP1*NONE*1	12/02/93	2.06	87.40	
G44587	G44587*SP1*NONE*1	12/03/93	2.06	105.80	
G44588	G44588*SP1*NONE*1	12/04/93	2.06	97.10	
G44589	G44589*SP1*NONE*1	12/05/93	2.06	99.00	
G44730	G44730*SP1*NONE*1	12/06/93	2.06	85.90	
G44731	G44731*SP1*NONE*1	12/07/93	2.06	86.90	
G44588	G44588*SP1*NONE*2	12/15/93	2.06	98.50	
G45176	G45176*SP1*NONE*1	12/19/93	2.06	84.00	- Recoveries are good and close to the average.
G45230	G45230*SP1*NONE*1	12/20/93	2.06	87.40	Trend noted. New data indicates no bias.
G45303	G45303*SP1*NONE*1	12/21/93	2.06	83.50	
G45533	G45533*SP1*NONE*1	01/04/94	2.06	90.80	
G45532	G45532*SP1*NONE*1	01/05/94	2.06	82.50	
G45531	G45531*SP1*NONE*1	01/06/94	2.06	88.80	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	AVG REC	STD DEV REC
121.001	44.999	108.334	57.666	83	12.667

#### LEGEND

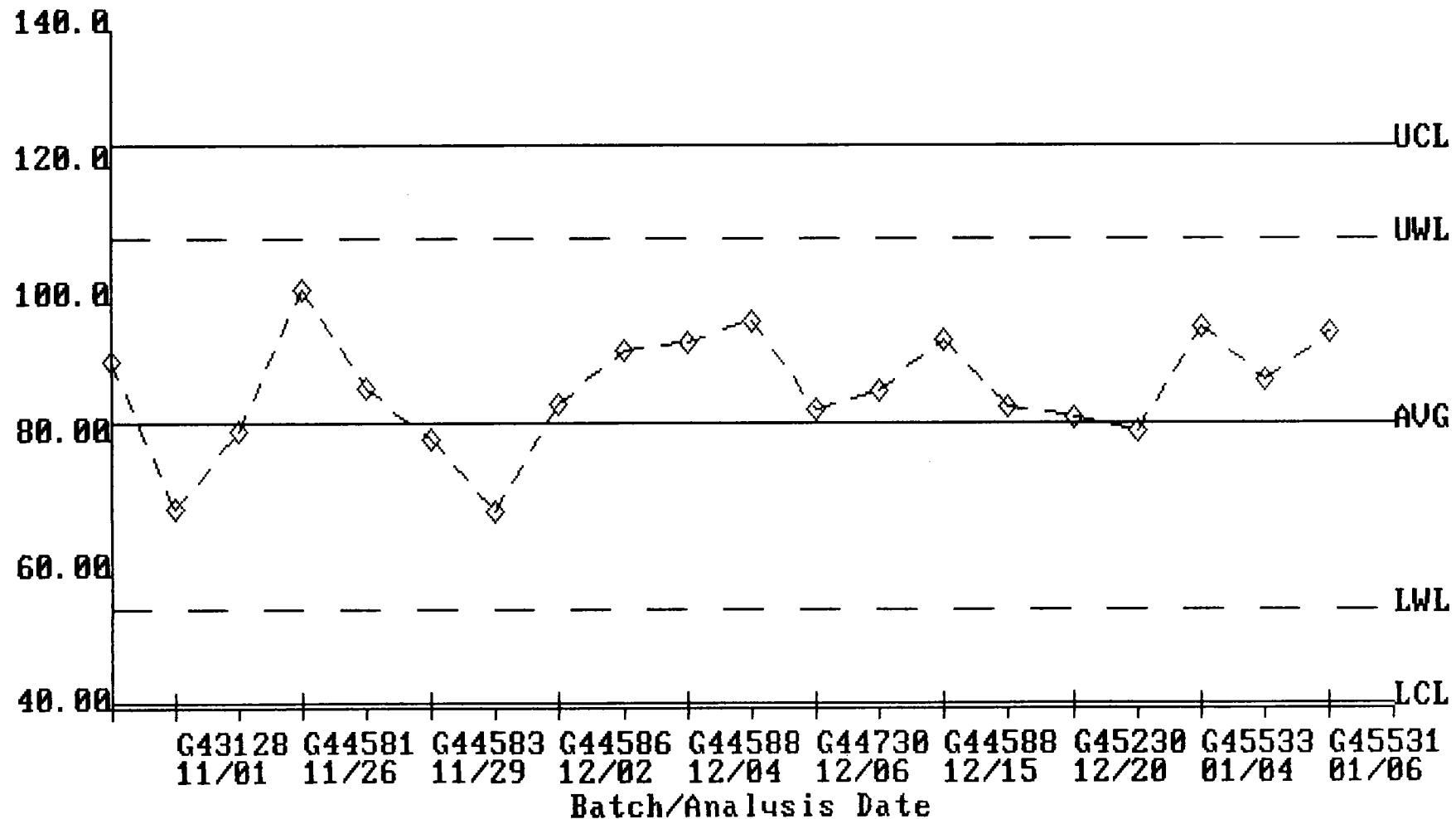
U. = UPPER  
 L. = LOWER  
 W. = WARNING  
 REC = RECOVERY

#### REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)  
 EXCLUDE ZERO RECVS FROM STATISTICS  
 USE ACTIVE CONTROL LIMITS FROM STORET FILE  
 PLOT QC CHART  
 AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

000-441

Standard Matrix Spike [SP] BENZO[K]FLUORANTHENE, UG/L 34242-8310/3520-G



## Standard Matrix Spikes (SP) BENZO(K)FLUORANTHENE UG/L 34242\*8310/3520-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42196	G42196*SP1*NONE*1	10/11/93	1.06	91.30	
G43128	G43128*SP1*NONE*1	11/01/93	1.06	69.50	
G44580	G44580*SP1*NONE*1	11/25/93	1.06	80.80	
G44581	G44581*SP1*NONE*1	11/26/93	1.06	101.90	
G44582	G44582*SP1*NONE*1	11/27/93	1.06	87.20	
G44583	G44583*SP1*NONE*1	11/29/93	1.06	79.70	
G44584	G44584*SP1*NONE*1	11/30/93	1.06	69.20	
G44586	G44586*SP1*NONE*1	12/02/93	1.06	84.80	
G44587	G44587*SP1*NONE*1	12/03/93	1.06	92.60	
G44588	G44588*SP1*NONE*1	12/04/93	1.06	94.10	
G44589	G44589*SP1*NONE*1	12/05/93	1.06	97.20	
G44730	G44730*SP1*NONE*1	12/06/93	1.06	84.10	
G44731	G44731*SP1*NONE*1	12/07/93	1.06	86.80	
G44588	G44588*SP1*NONE*2	12/15/93	1.06	94.30	
G45176	G45176*SP1*NONE*1	12/19/93	1.06	84.50	- Recoveries are good and close to the average.
G45230	G45230*SP1*NONE*1	12/20/93	1.06	83.00	Trend noted. New data indicates no bias.
G45303	G45303*SP1*NONE*1	12/21/93	1.06	80.90	
G45533	G45533*SP1*NONE*1	01/04/94	1.06	96.20	
G45532	G45532*SP1*NONE*1	01/05/94	1.06	88.50	
G45531	G45531*SP1*NONE*1	01/06/94	1.06	95.30	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
123.001	40.999	109.334	54.666	82	13.667

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

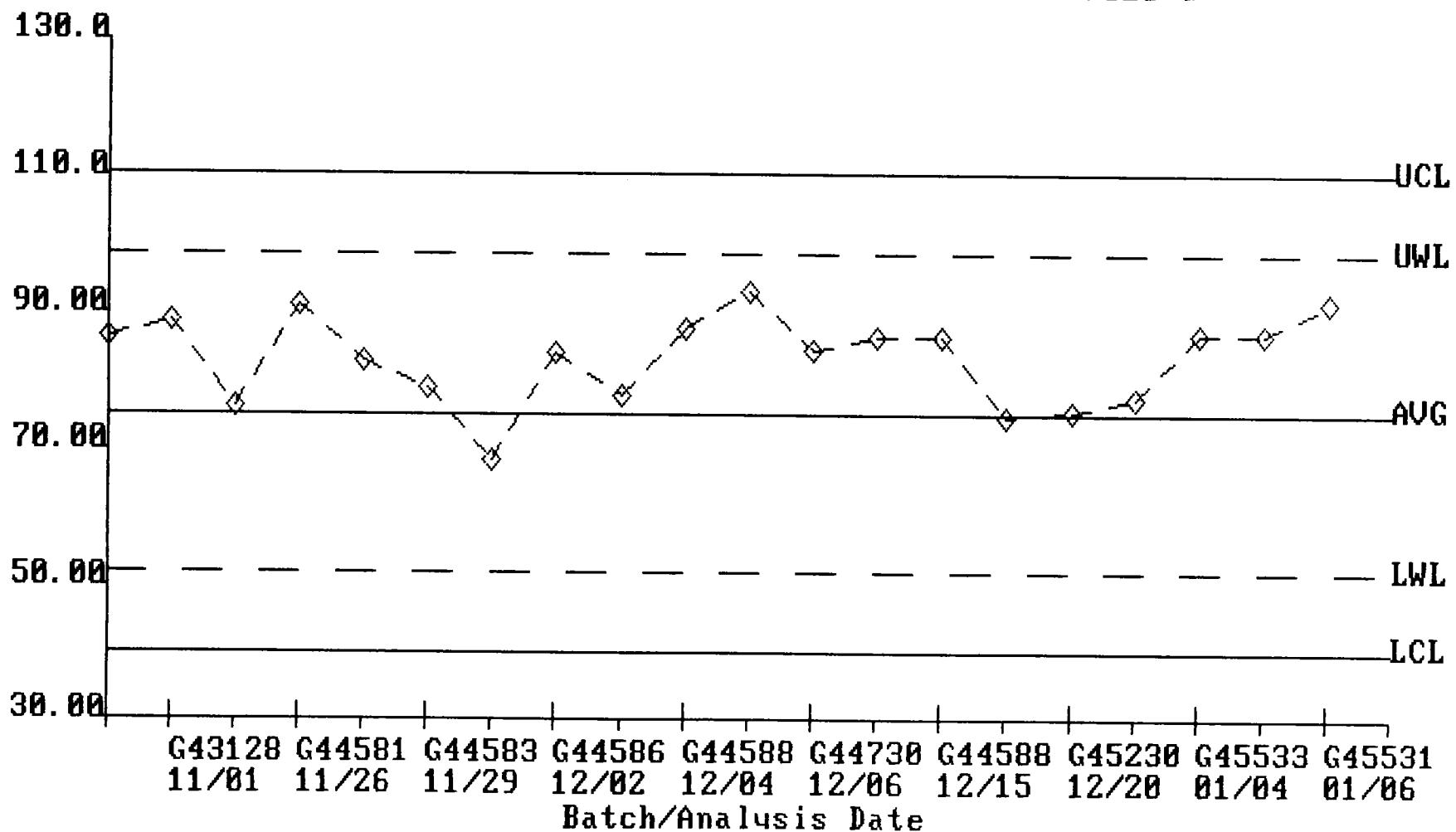
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

34-000

Standard Matrix Spike [SP] FLUORENE, UG/L 34381\*8310/3520-G



## Standard Matrix Spikes (SP) FLUORENE, ug/l 34381\*8310/3520-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42196	G42196*SP1*NONE*1	10/11/93	32.4	86.10	
G43128	G43128*SP1*NONE*1	11/01/93	32.4	88.60	
G44580	G44580*SP1*NONE*1	11/25/93	32.4	76.20	
G44581	G44581*SP1*NONE*1	11/26/93	32.4	91.00	
G44582	G44582*SP1*NONE*1	11/27/93	32.4	82.70	
G44583	G44583*SP1*NONE*1	11/29/93	32.4	78.70	
G44584	G44584*SP1*NONE*1	11/30/93	32.4	68.20	
G44586	G44586*SP1*NONE*1	12/02/93	32.4	84.00	
G44587	G44587*SP1*NONE*1	12/03/93	32.4	77.80	
G44588	G44588*SP1*NONE*1	12/04/93	32.4	87.30	
G44589	G44589*SP1*NONE*1	12/05/93	32.4	92.90	
G44730	G44730*SP1*NONE*1	12/06/93	32.4	84.30	
G44731	G44731*SP1*NONE*1	12/07/93	32.4	86.40	
G44588	G44588*SP1*NONE*2	12/15/93	32.4	86.10	
G45176	G45176*SP1*NONE*1	12/19/93	32.4	74.70	
G45230	G45230*SP1*NONE*1	12/20/93	32.4	75.30	
G45303	G45303*SP1*NONE*1	12/21/93	32.4	77.20	
G45533	G45533*SP1*NONE*1	01/04/94	32.4	86.70	
G45532	G45532*SP1*NONE*1	01/05/94	32.4	86.70	
G45531	G45531*SP1*NONE*1	01/06/94	32.4	81.40	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
110.001	39.999	98.334	51.666	75	11.667

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

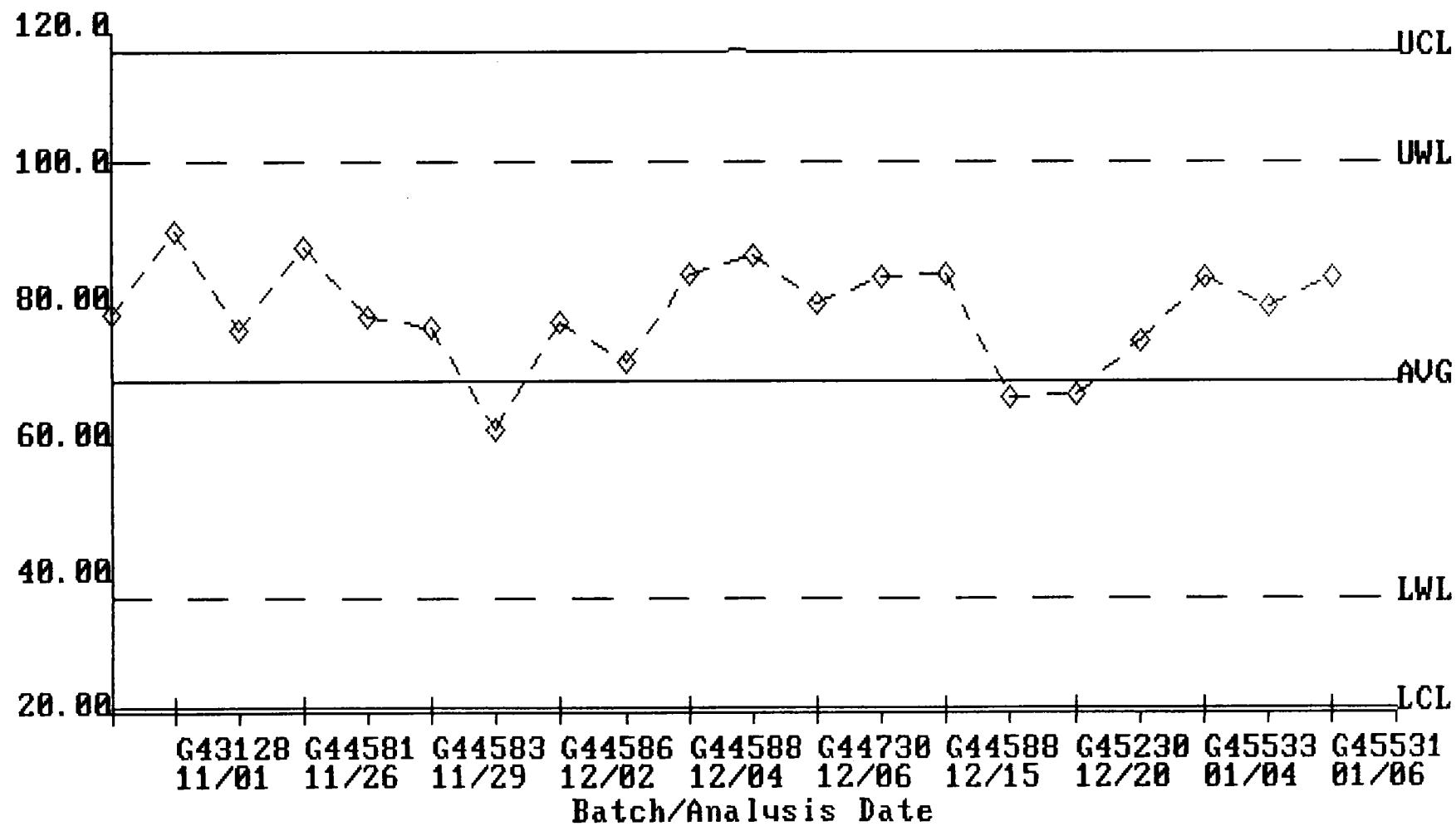
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

544000

Standard Matrix Spike [SP] NAPHTHALENE, UG/L 34696\*8310/3520-0



## Standard Matrix Spikes (SP), NAPHTHALENE, UG/L 34696\*8310/3520-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42196	G42196*SP1*NONE*1	10/11/93	98.0	78.50	
G43128	G43128*SP1*NONE*1	11/01/93	98.0	90.90	
G44580	G44580*SP1*NONE*1	11/25/93	98.0	76.40	
G44581	G44581*SP1*NONE*1	11/26/93	98.0	88.40	
G44582	G44582*SP1*NONE*1	11/27/93	98.0	78.20	
G44583	G44583*SP1*NONE*1	11/29/93	98.0	76.60	
G44584	G44584*SP1*NONE*1	11/30/93	98.0	61.80	
G44586	G44586*SP1*NONE*1	12/02/93	98.0	77.40	
G44587	G44587*SP1*NONE*1	12/03/93	98.0	71.40	
G44588	G44588*SP1*NONE*1	12/04/93	98.0	84.70	
G44589	G44589*SP1*NONE*1	12/05/93	98.0	87.10	
G44730	G44730*SP1*NONE*1	12/06/93	98.0	80.10	
G44731	G44731*SP1*NONE*1	12/07/93	98.0	84.10	
G44588	G44588*SP1*NONE*2	12/15/93	98.0	84.70	
G45176	G45176*SP1*NONE*1	12/19/93	98.0	66.60	
G45230	G45230*SP1*NONE*1	12/20/93	98.0	66.70	
G45303	G45303*SP1*NONE*1	12/21/93	98.0	74.60	
G45533	G45533*SP1*NONE*1	01/04/94	98.0	84.00	
G45532	G45532*SP1*NONE*1	01/05/94	98.0	79.70	
G45531	G45531*SP1*NONE*1	01/06/94	98.0	84.10	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
117	21	101	37	69	16

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

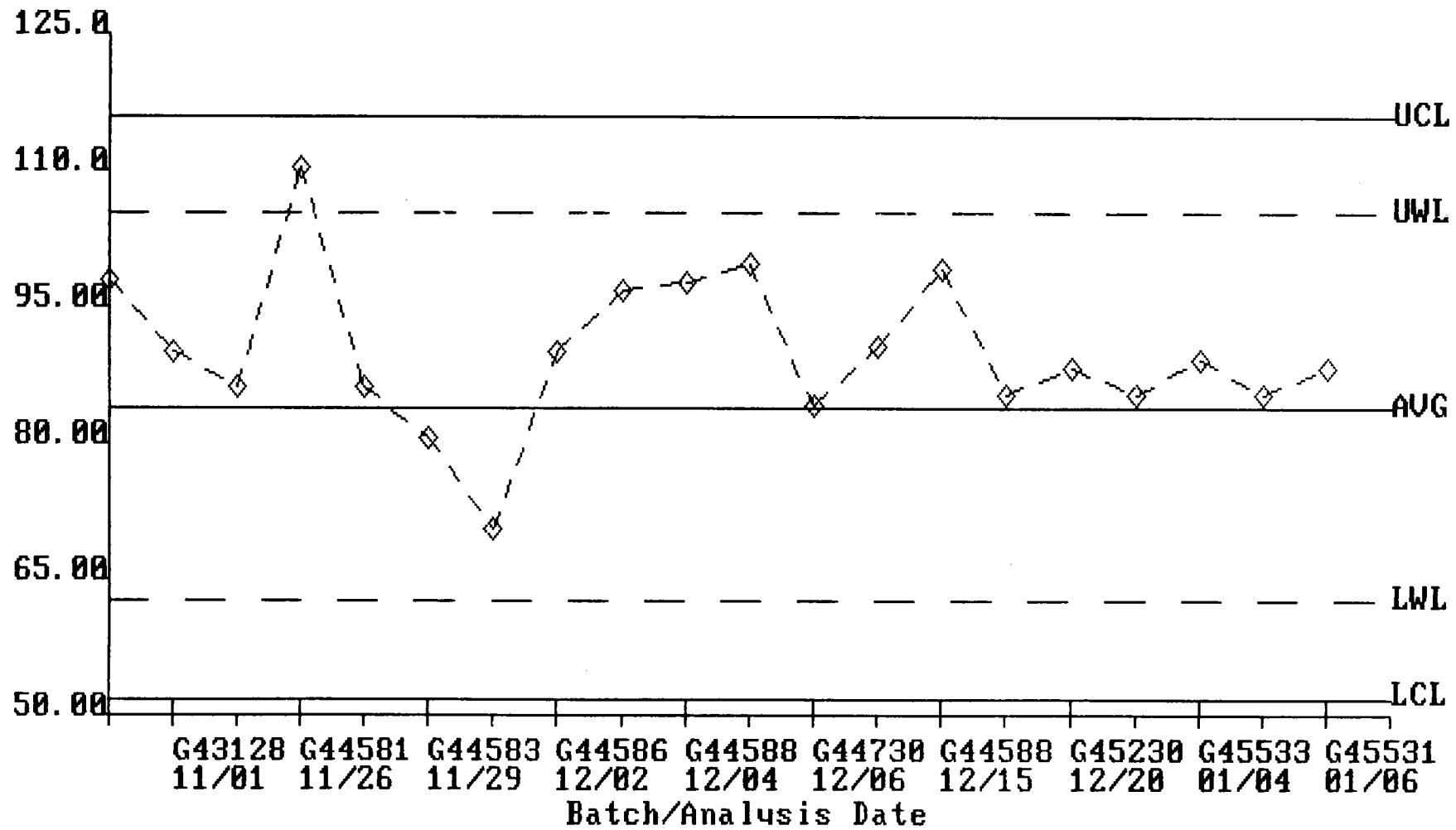
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScrn

44-000

Standard Matrix Spike [SP] PHENANTHRENE, UG/L 34461\*8310/3528-G



## Standard Matrix Spikes (SP) PHENANTHRENE, UG/L 34461\*8310/3520-C

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G42196	G42196*SP1*NONE*1	10/11/93	53.2	98.10	
G43128	G43128*SP1*NONE*1	11/01/93	53.2	90.00	
G44580	G44580*SP1*NONE*1	11/25/93	53.2	86.30	
G44581	G44581*SP1*NONE*1	11/26/93	53.2	110.30	
G44582	G44582*SP1*NONE*1	11/27/93	53.2	86.30	
G44583	G44583*SP1*NONE*1	11/29/93	53.2	80.80	
G44584	G44584*SP1*NONE*1	11/30/93	53.2	70.70	
G44586	G44586*SP1*NONE*1	12/02/93	53.2	90.00	
G44587	G44587*SP1*NONE*1	12/03/93	53.2	96.80	
G44588	G44588*SP1*NONE*1	12/04/93	53.2	97.90	
G44589	G44589*SP1*NONE*1	12/05/93	53.2	99.80	
G44730	G44730*SP1*NONE*1	12/06/93	53.2	84.20	
G44731	G44731*SP1*NONE*1	12/07/93	53.2	90.80	
G44588	G44588*SP1*NONE*2	12/15/93	53.2	99.40	
G45176	G45176*SP1*NONE*1	12/19/93	53.2	85.30	
G45230	G45230*SP1*NONE*1	12/20/93	53.2	88.30	
G45303	G45303*SP1*NONE*1	12/21/93	53.2	85.30	
G45533	G45533*SP1*NONE*1	01/04/94	53.2	89.30	
G45532	G45532*SP1*NONE*1	01/05/94	53.2	85.30	
G45531	G45531*SP1*NONE*1	01/06/94	53.2	88.50	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
116.001	51.999	105.334	62.666	84	10.667

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

67,000

**SOIL ANALYTICAL RESULTS  
DECEMBER 1 AND 2, 1993**

# **SAMPLE DATA PACKAGE**

NABKRIA

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# **CASE NARRATIVE**

## CASE NARRATIVE

January 21, 1994

For: ESE Field Group NABKB1A

Fifty soil samples and four associated aqueous blanks were evaluated for selected UST-type parameters, under NEESA Level C protocols. The accompanying *Sample/Method/Date/Batch Cross Reference* summarizes ID Cross References, Dates of Collection, Preparation, and Analysis, and ESE Batch numbers.

Copies of Chain-of-Custody are enclosed. Documentation is also provided regarding significant revision to sample ID based on discrepancies between original Chain of Custody documentation and actual sample labels. Discussions by telephone and faxes of proposed and confirmed revisions resulted in the final identifications. Samples are to be returned to the Project Manager for final confirmation of sample ID accuracy. A corrective action report has been executed in conformance with our SOPs for inclusion in both this document and in ESE's monthly Progress Report to NEESA.

In general, all QC parameters were within criteria except for sample matrix quality control exceedances which were due to matrix effects. Following are any exceptions or additions to this statement, identified by ascending batch number as they are presented in the *QC Summary*.

### TRPH, Batch G45121

No MSD was analyzed in this batch of samples. Sufficient sample volume was not provided from the field as anticipated.

**000003**

## **SAMPLE ID & DISPOSITION TABLE**

Environmental Science and Engineering, Inc.  
SAMPLE IDENTIFICATION & DISPOSITION TABLE

PAGE 1

01/20/94

SAMPLE ID	STATION ID	COLLECT.	RECEIPT	CLASSIFICATION	EXTRACT.	ANALYSIS	C-E	E-A	C-A	ESE	Batch
NABKB1A*24	2029DP1	12/02/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/14/93	12/14/93	12	0	12	G45055	
					12/22/93	12/23/93	20	1	21	G45477	
					12/10/93	12/13/93	8	3	11	G45595	
NABKB1A*25	2029DP2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	6	0	6	G44808	
					12/21/93	12/23/93	20	2	22	G45476	
					12/10/93	12/13/93	9	3	12	G45595	
NABKB1A*20	2029DUP2-2	12/02/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	5	0	5	G44808	
					12/22/93	12/23/93	20	1	21	G45477	
					12/10/93	12/13/93	8	3	11	G45595	
NABKB1A*9	2029SB1-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	6	0	6	G44808	
					12/22/93	12/23/93	21	1	22	G45477	
					12/08/93	12/09/93	7	1	8	G45051	
NABKB1A*60	2029SB1-5	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/14/93	12/14/93	13	0	13	G45055	
					12/22/93	12/23/93	21	1	22	G45477	
					12/10/93	12/13/93	9	3	12	G45595	
NABKB1A*18	2029SB10-2	12/02/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	5	0	5	G44808	
					12/22/93	12/23/93	20	1	21	G45477	
					12/10/93	12/13/93	8	3	11	G45595	
NABKB1A*19	2029SB11-2	12/02/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	5	0	5	G44808	
					12/22/93	12/23/93	20	1	21	G45477	
					12/10/93	12/13/93	8	3	11	G45595	
NABKB1A*21	2029SB13-2	12/02/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	5	0	5	G44808	
					12/22/93	12/23/93	20	1	21	G45477	
					12/10/93	12/13/93	8	3	11	G45595	
NABKB1A*22	2029SB14-2	12/02/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	5	0	5	G44808	
					12/22/93	12/23/93	20	1	21	G45477	
					12/10/93	12/13/93	8	3	11	G45595	
NABKB1A*23	2029SB14-4	12/02/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	5	0	5	G44808	
					12/22/93	12/23/93	20	1	21	G45477	
					12/10/93	12/13/93	8	3	11	G45595	
NABKB1A*10	2029SB2-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	6	0	6	G44808	
					12/21/93	12/23/93	20	2	22	G45476	
					12/08/93	12/09/93	7	1	8	G45051	
NABKB1A*11	2029SB3-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	6	0	6	G44808	
					12/21/93	12/23/93	20	2	22	G45476	
					12/08/93	12/09/93	7	1	8	G45051	
NABKB1A*12	2029SB4-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	6	0	6	G44808	
					12/21/93	12/23/93	20	2	22	G45476	
					12/10/93	12/13/93	9	3	12	G45595	
NABKB1A*13	2029SB5-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	6	0	6	G44808	
					12/21/93	12/23/93	20	2	22	G45476	
					12/10/93	12/13/93	9	3	12	G45595	
NABKB1A*14	2029SB6-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	6	0	6	G44808	
					12/21/93	12/23/93	20	2	22	G45476	
					12/10/93	12/13/93	9	3	12	G45595	
NABKB1A*15	2029SB7-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	6	0	6	G44808	
					12/21/93	12/23/93	20	2	22	G45476	
					12/10/93	12/13/93	9	3	12	G45595	
NABKB1A*46	2029SB7-4	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216 TRPH - EPA 9071/9073 VOCS - EPA 8020	12/07/93	12/07/93	6	0	6	G44808	
					12/22/93	12/23/93	21	1	22	G45477	
					12/10/93	12/13/93	9	3	12	G45613	

Note: C-E = days from Collection to Extraction/Preparation

E-A = days from Extraction/Preparation to Analysis

C-A = days from Collection to Analysis

000604

Environmental Science and Engineering, Inc.  
SAMPLE IDENTIFICATION & DISPOSITION TABLE  
01/20/94

PAGE 2

SAMPLE ID	STATION ID	COLLECT.	RECEIPT	CLASSIFICATION	EXTRACT.	ANALYST	C-E	E-A	C-A	ESE	Batch
NABKB1A*16	2029SB8-2	12/02/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	5	0	5	G44808	
				TRPH - EPA 9071/9073	12/22/93	12/23/93	20	1	21	G45477	
				VOCS - EPA 8020	12/10/93	12/13/93	8	3	11	G45595	
NABKB1A*32	2029SB8-4	12/02/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	5	0	5	G44808	
				TRPH - EPA 9071/9073	12/22/93	12/23/93	20	1	21	G45477	
				VOCS - EPA 8020	12/10/93	12/13/93	8	3	11	G45613	
NABKB1A*17	2029SB9-2	12/02/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	5	0	5	G44808	
				TRPH - EPA 9071/9073	12/22/93	12/23/93	20	1	21	G45477	
				VOCS - EPA 8020	12/10/93	12/13/93	8	3	11	G45595	
NABKB1A*36	3022DP1	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/14/93	12/14/93	13	0	13	G45055	
				TRPH - EPA 9071/9073	12/22/93	12/23/93	21	1	22	G45477	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45613	
NABKB1A*26	3022SB1-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/14/93	12/14/93	13	0	13	G45055	
				TRPH - EPA 9071/9073	12/21/93	12/23/93	20	2	22	G45476	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45595	
NABKB1A*61	3022SB1-6	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/14/93	12/14/93	13	0	13	G45055	
				TRPH - EPA 9071/9073	12/22/93	12/23/93	21	1	22	G45477	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45595	
NABKB1A*27	3022SB2-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	6	0	6	G44808	
				TRPH - EPA 9071/9073	12/21/93	12/23/93	20	2	22	G45476	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45595	
NABKB1A*35	3022SB2-5	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	6	0	6	G44808	
				TRPH - EPA 9071/9073	12/22/93	12/23/93	21	1	22	G45477	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45613	
NABKB1A*28	3022SB3-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	6	0	6	G44808	
				TRPH - EPA 9071/9073	12/21/93	12/23/93	20	2	22	G45476	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45613	
NABKB1A*34	3022SB3-5	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	6	0	6	G44808	
				TRPH - EPA 9071/9073	12/22/93	12/23/93	21	1	22	G45477	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45613	
NABKB1A*29	3022SB4-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	6	0	6	G44808	
				TRPH - EPA 9071/9073	12/21/93	12/23/93	20	2	22	G45476	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45613	
NABKB1A*33	3022SB4-5	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	6	0	6	G44808	
				TRPH - EPA 9071/9073	12/22/93	12/23/93	21	1	22	G45477	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45613	
NABKB1A*30	3022SB5-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	6	0	6	G44808	
				TRPH - EPA 9071/9073	12/22/93	12/23/93	21	1	22	G45477	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45613	
NABKB1A*31	3022SB6-2	12/01/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	6	0	6	G44808	
				TRPH - EPA 9071/9073	12/22/93	12/23/93	21	1	22	G45477	
				VOCS - EPA 8020	12/10/93	12/13/93	9	3	12	G45613	
NABKB1A*52	5052DP1	11/30/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/14/93	12/14/93	14	0	14	G45055	
				TRPH - EPA 9071/9073	12/21/93	12/23/93	21	2	23	G45476	
				VOCS - EPA 8020	12/08/93	12/09/93	8	1	9	G45051	
NABKB1A*53	5052DP2	11/30/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	7	0	7	G44808	
				TRPH - EPA 9071/9073	12/21/93	12/23/93	21	2	23	G45476	
				VOCS - EPA 8020	12/08/93	12/09/93	8	1	9	G45051	
NABKB1A*54	5052SB1-10	11/30/93	12/03/93	PERCENT MOISTURE - ASTM D2216	12/07/93	12/07/93	7	0	7	G44808	
				TRPH - EPA 9071/9073	12/21/93	12/23/93	21	2	23	G45476	
				VOCS - EPA 8020	12/08/93	12/09/93	8	1	9	G45051	

Note: C-E = days from Collection to Extraction/Preparation

| E-A = days from Extraction/Preparation to Analysis

• C-A = days from Collection to Analysis

66666



# **CHAIN OF CUSTODY**

**000608**

TO :

904 333 6622

1993.12-20

14:39

#616 P.02/03

DEC 13 '93 16:41

FROM E.S.E. GAINESVILLE

TO 19126739235

PAGE.002

Environmental Science &amp; Engineering, Inc. 12/13/93

PAGE # 1

PROJECT NUMBER 7934090G 0201  
FIELD GROUP NABKB1APROJECT NAME NSB KINGS BAY/ABB-ES  
PROJECT MANAGER J.D. SHAMIS

STORET CODE:

METHOD CODE:

PARAMETER:

UNITS:

FLD.GRP.	#	SAMPLE ID	DATE	TIME
NABKB1A	24	2029DP1	12/02/93	
NABKB1A	25	2029DP2	12/01/93	
NABKB1A	20	2029SB1-2	12/02/93	10:15
NABKB1A	9	2029SB1-2	12/01/93	14:09
NABKB1A	60	2029SB1-5	12/01/93	
NABKB1A	18	2029SB10-2	12/02/93	09:25
NABKB1A	19	2029SB11-2	12/02/93	09:45
NABKB1A	21	2029SB13-2	12/02/93	10:30
NABKB1A	22	2029SB14-2	12/02/93	10:45
NABKB1A	23	2029SB14-4	12/02/93	10:50
NABKB1A	10	2029SB2-2	12/01/93	14:25
NABKB1A	11	2029SB3-2	12/01/93	14:35
NABKB1A	12	2029SB4-2	12/01/93	14:55
NABKB1A	13	2029SB5-2	12/01/93	15:10
NABKB1A	14	2029SB6-2	12/01/93	15:30
NABKB1A	15	2029SB7-2	12/01/93	15:45
NABKB1A	46	2029SB7-4	12/01/93	15:50
NABKB1A	16	2029SB8-2	12/02/93	08:35
NABKB1A	32	2029SB8-4	12/02/93	08:45
NABKB1A	17	2029SB9-2	12/02/93	09:00
NABKB1A	36	3022DP1	12/01/93	
NABKB1A	26	3022SB1-2	12/01/93	08:55
NABKB1A	61	3022SB1-6	12/01/93	09:03
NABKB1A	27	3022SB2-2	12/01/93	09:10
NABKB1A	35	3022SB2-5	12/01/93	09:15
NABKB1A	28	3022SB3-2	12/01/93	09:35
NABKB1A	34	3022SB3-5	12/01/93	09:47
NABKB1A	29	3022SB4-2	12/01/93	10:00
NABKB1A	33	3022SB4-5	12/01/93	10:15
NABKB1A	30	3022SB5-2	12/01/93	10:30
NABKB1A	31	3022SB6-2	12/01/93	10:40
NABKB1A	52	5052DP1	11/30/93	
NABKB1A	53	5052DP2	11/30/93	
NABKB1A	54	5052SB1-10	11/30/93	11:23
NABKB1A	37	5052SB1-5	11/30/93	11:01
NABKB1A	55	5052SB2-10	11/30/93	11:47
NABKB1A	38	5052SB2-5	11/30/93	11:34
NABKB1A	51	5052SB3-10	11/30/93	12:14
NABKB1A	39	5052SB3-5	11/30/93	12:05
NABKB1A	56	5052SB4-10	11/30/93	12:42
NABKB1A	40	5052SB4-5	11/30/93	12:35
NABKB1A	62	5052SB5-10	11/30/93	13:15
NABKB1A	41	5052SB5-5	11/30/93	13:00
NABKB1A	50	5052SB6-10	11/30/93	15:20
NABKB1A	42	5052SB6-5	11/30/93	15:10
NABKB1A	41	5052SB7-10	11/30/93	15:40
NABKB1A	41	5052SB7-5	11/30/93	15:30
NABKB1A	48	5052SB8-10	11/30/93	16:05

*Felicia A. Johnson* 80  
I  
COLOR  
PCU

(was a \*24)

(was a \*36)

(was a \*52)

000009

TO : 904 333 6622 1993, 12-20 14:39 #616 P.03/03

13 '93 16:41 FROM E.G.E. GAINESVILLE

TO 19126739235

PAGE.003

Environmental Science & Engineering, Inc. 12/13/93

PROJECT NUMBER 7934090G 0201  
FIELD GROUP NABKB1A

PROJECT NAME NSB KINGS BAY/ABB-ES  
PROJECT MANAGER J.D. SHAMIS

PAGE # 2

STORET CODE:

METHOD CODE:

PARAMETER:

UNITS:

FLD.GRP.	#	SAMPLE ID	DATE	TIME
NABKB1A	44	5052SB8-5	11/30/93	15:55
NABKB1A	45	5052SB9-5	11/30/93	16:30
NABKB1A	4	SBEB1	11/30/93	11:52
NABKB1A	5	SBEB2	12/02/93	09:55
NABKB1A	7	SBFB1	12/02/93	11:15
NABKB1A	3	TRPBLK	12/02/93	

80  
I  
COLOR  
PCU

Environmental Science & Engineering, Inc. 11-19-93 \*\*\* ELD LOGSHEET \*\*\* FIELD GROUP: NABKB1A  
PROJECT NUMBER 7934090G 0201 PROJECT NAME: NSB KINGS BAY/ABB-ES LAB COORD. JEFF SHAMIS

B

ESE #	SITE/STA HAZ?	FRACTIONS (CIRCLE)	DATE	TIME	PARAMETER LIST
*1	TRPBLK	VP VP VP	12/ /93		NABKB1AV
*2	TRPBLK	VP VP VP	12/ /93		NABKB1AV
*3	TRPBLK	VP VP P	12/ /93		NABKB1AV
*4	SB-EB1	○ ○ VP VP VP VP	11/30/93	1152	NABKB1AW
*5	SB-EB2	○ ○ VP VP VP VP	12/ 2/93	0955	NABKB1AW
*6	SB-EB3	O O VP VP VP VP	12/ /93		NABKB1AW
*7	SB-FB1	○ ○ VP VP VP VP	12/ 2/93	1115	NABKB1AW
*8	SB-FB2	O O VP VP VP VP	12/ /93		NABKB1AW
*9	2029-SB1 (2'-4')	SS SV	12/ 1/93	1409	NABKB1AS
*10	2029-SB2 (2-4')	SS SV	12/ 1/93	1425	NABKB1AS
*11	2029-SB3 (2-4')	SS SV	12/ 1/93	1435	NABKB1AS
*12	2029-SB4 (2-4')	SS SV	12/ 1/93	1455	NABKB1AS
*13	2029-SB5 (2-4')	SS SV	12/ 1/93	1510	NABKB1AS
*14	2029-SB6 (2-4')	SS SV	12/ 1/93	1530	NABKB1AS

NOTE - CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED  
- CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES  
- HAZARD CODES: I=IGNITABLE C=CORROSIVE R=REACTIVE T=TOXIC WASTE H=OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN  
- PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science & Engineering, Inc.

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) VIA: REC'D BY (NAME/ORGANIZATION/DATE/TIME)

1 *Jefferson ABB-ES* 12/2/93 6:30pm

FEDEX

*Jefferson ESE 12/3/93 1430*

2

3

SAMPLER: Shipped on Ice? Yes/No; I anticipate shipping (#) more samples on / /  
SAMPLE CUSTODIAN: Custody Seals Used? Yes/No; If Yes, Seals Intact? Yes/No Interior Temp? 2 Deg C  
Preservatives Audited? Yes/No Any Problems? Yes/No If Yes, describe:

*TRP BLK \*3  
INSTEAD of \*1 as indicated on sheet*

000011

Environmental Science & Engineering, Inc. 11-19-93 \*\*\* FIELD LOGSHEET \*\*\* FIELD GROUP: NABKB1A  
PROJECT NUMBER: 7934090G 0201 PROJECT NAME: NSB KINGS BAY/ABB-ES LAB COORD. JEFF SHAMIS

ESE	SITE/STA HAZ? FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*15	2029-SB78 (2'-4') SS SV	12/ 2/93	0835	NABKB1AS
*16	2029-SB8 (4'-6') SS SV	12/ 2/93	0845	NABKB1AS
*17	2029-SB9 (2'-4') SS SV	12/ 2/93	0900	NABKB1AS
*18	2029-SB10 (2'-4') SS SV	12/ 2/93	0925	NABKB1AS
*19	2029-SB11 (2'-4') SS SV	12/ 2/93	0945	NABKB1AS
*20	2029-SB12 (2'-4') SS SV	12/ 2/93		NABKB1AS
*21	2029-SB13 (2'-4') SS SV	12/ 2/93	1015	NABKB1AS
*22	2029-SB14 (2'-4') SS SV	12/ 2/93	1030	NABKB1AS
*23	2029-SB15 (2'-4') SS SV	12/ 2/93	1045	NABKB1AS
*24	2029-SB16 (4'-6') SS SS SV SV	12/ 2/93	1050	NABKB1AS
*25	2029-DP2 SS SS SV SV	12/ /93		NABKB1AS
*26	3022-SB1 (2'-4') SS SV	12/ 1/93	0855	NABKB1AS
*27	3022-SB2 (2'-4') SS SV	12/ 1/93	0910	NABKB1AS
*28	3022-SB3 (2'-4') SS SV	12/ 1/93	0935	NABKB1AS

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED  
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES  
-HAZARD CODES: I=IGNITABLE C=CORROSIVE R=REACTIVE T=TOXIC WASTE H=OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN  
-PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science & Engineering, Inc.

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) VIA: REC'D BY (NAME/ORGANIZATION/DATE/TIME)  
1 *Jefferson J. Anderson ABB-ES 12/2/93 1830* FEDEX *John Person ESE 12/3/93 1500*  
2  
3

SAMPLER: Shipped on Ice? Yes/No; I anticipate shipping (#) more samples on /  
SAMPLE CUSTODIAN: Custody Seals Used? Yes/No; If Yes, Seals Intact? Yes/No Interior Temp?  Deg C  
Preservatives Audited? Yes/No Any Problems? Yes/No; If Yes, describe:

000012

# HITS REPORT

Environmental Science & Engineering, Inc. 01/21/94 STATUS: HITS ONLY PAGE 1  
 PROJECT NUMBER 7934090G 0201 PROJECT NAME NSB KINGS BAY/ABB-ES  
 FIELD GROUP NABKB1A LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S	STORET	2029DP1	2029DP2	2029DUP2-2	2029SB1-2	2029SB1-5	2029SB10-22029SB11-22029SB13-22029SB14-22029SB14-4	2029SB2-2	2029SB3-2	2029SB4-2
PARAMETERS		NABKB1A	NABKB1A	NABKB1A	NABKB1A	NABKB1A	NABKB1A	NABKB1A	NABKB1A	NABKB1A
UNITS	METHOD	24	25	20	9	60	18	19	21	22
DATE		12/02/93	12/01/93	12/02/93	12/01/93	12/01/93	12/02/93	12/02/93	12/02/93	12/02/93
TIME				10:15	14:09		09:25	09:45	10:30	10:45
MOISTURE	70320	13.2	17.9	12.2	13.2	18.1	16.8	19.9	14.0	14.5
%WET WT	ASTM-G									
HYDROCARBONS, PETROLEUM (TRPH)	98233	46.5	--	--	--		60.5	50.8	--	36.3
UG/G-DRY	9071/9073-G									49.4

000015

Environmental Science & Engineering, Inc. 01/21/94 STATUS: HITS ONLY PAGE 2  
 PROJECT NUMBER 7934090G 0201 PROJECT NAME NSB KINGS BAY/ABB-ES  
 FIELD GROUP NABKB1A LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S		2029SB5-2	2029SB6-2	2029SB7-2	2029SB7-4	2029SB8-2	2029SB8-4	2029SB9-2	3022DP1	3022SB1-2	3022SB1-6	3022SB2-2	3022SB2-5	3022SB3-2
PARAMETERS	STORET	NABKB1A	NABKB1A	NABKB1A	NABKB1A	NABKB1A	NABKB1A	NABKB1A						
UNITS	METHOD	13	14	15	46	16	32	17	36	26	61	27	35	28
DATE		12/01/93	12/01/93	12/01/93	12/01/93	12/02/93	12/02/93	12/02/93	12/01/93	12/01/93	12/01/93	12/01/93	12/01/93	12/01/93
TIME		15:10	15:30	15:45	15:50	08:35	08:45	09:00	08:55	09:03	09:10	09:15	09:15	09:35
MOISTURE	70320	18.7	14.1	12.3	15.1	17.0	18.3	11.5	21.7	12.7	15.9	13.0	17.3	15.1
%WET WT	ASTM-G													
HYDROCARBONS, PETROLEUM (TRPH)	98233	1110	--	--	--	--	--	--	--	--	--	168	7830	--
UG/G-DRY	9071/9073-G													
ETHYLBENZENE	34374	--	--	--	--	--	--	--	--	--	--	759	--	--
UG/KG-DRY	8020-G													
TOLUENE	34483	--	--	--	--	--	--	--	--	--	--	205	--	--
UG/KG-DRY	8020-G													
XYLENES, TOTAL	45510	--	--	--	--	--	--	--	--	--	--	1770	--	--
UG/KG-DRY	CALC													

000016

## **RESULTS OF ANALYSIS**

Environmental Science & Engineering, Inc. 01/21/94 STATUS: FINAL PAGE 1  
 PROJECT NUMBER 7934090G 0201 PROJECT NAME NSB KINGS BAY/ABB-ES  
 FIELD GROUP NABKB1A LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS	STORET METHOD	2029DP1 NABKB1A 24	2029DP2 NABKB1A 25	2029DUP2-2 NABKB1A 20	2029SB1-2 NABKB1A 9	2029SB1-52029SB10-22029SB11-22029SB13-22029SB14-22029SB14-4 NABKB1A 60	2029SB1-52029SB10-22029SB11-22029SB13-22029SB14-22029SB14-4 NABKB1A 18	2029SB1-52029SB10-22029SB11-22029SB13-22029SB14-22029SB14-4 NABKB1A 19	2029SB1-52029SB10-22029SB11-22029SB13-22029SB14-22029SB14-4 NABKB1A 21	2029SB2-2 NABKB1A 22	2029SB3-2 NABKB1A 23	2029SB4-2 NABKB1A 10		
UNITS														
DATE		12/02/93	12/01/93	12/02/93	12/01/93	12/01/93	12/02/93	12/02/93	12/02/93	12/01/93	12/01/93	12/01/93		
TIME				10:15	14:09		09:25	09:45	10:30	10:45	10:50	14:25		
MOISTURE %WET WT	70320 ASTM-G	13.2	17.9	12.2	13.2	18.1	16.8	19.9	14.0	14.5	17.6	17.2	24.9	18.8
HYDROCARBONS, PETROLEUM (TRPH)	98233 UG/G-DRY 9071/9073-G	46.5	<34.6	<32.2	<32.8	<34.5	60.5	50.8	<33.1	36.3	49.4	<34.3	<38.1	<34.8
BENZENE UG/KG-DRY	34237 8020-G	<115	<122	<114	<115	<122	<120	<125	<116	<117	<121	<121	<133	<123
CHLOROBENZENE UG/KG-DRY	34304 8020-G	<115	<122	<114	<115	<122	<120	<125	<116	<117	<121	<121	<133	<123
DICHLOROBENZENE, TOTAL UG/KG-DRY	98578 8020-G	<115	<122	<114	<115	<122	<120	<125	<116	<117	<121	<121	<133	<123
ETHYLBENZENE UG/KG-DRY	34374 8020-G	<115	<122	<114	<115	<122	<120	<125	<116	<117	<121	<121	<133	<123
TOLUENE UG/KG-DRY	34483 8020-G	<115	<122	<114	<115	<122	<120	<125	<116	<117	<121	<121	<133	<123
XYLENES, TOTAL UG/KG-DRY	45510 CALC	<115	<122	<114	<115	<122	<120	<125	<116	<117	<121	<121	<133	<123
METHYL TERT BUTYL ETHER UG/KG-DRY	97018 8020-G	<115	<122	<114	<115	<122	<120	<125	<116	<117	<121	<121	<133	<123

ST00009

Environmental Science & Engineering, Inc. 01/21/94 STATUS: FINAL PAGE 2  
 PROJECT NUMBER 7934090G 0201 PROJECT NAME NSB KINGS BAY/ABB-ES  
 FIELD GROUP NABKB1A LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS	STORET METHOD	2029SB5-2	2029SB6-2	2029SB7-2	2029SB7-4	2029SB8-2	2029SB8-4	2029SB9-2	3022DP1	3022SB1-2	3022SB1-6	3022SB2-2	3022SB2-5	3022SB3-2
		NABKB1A	NABKB1A											
DATE		13	14	15	46	16	32	17	36	26	61	27	35	28
TIME		12/01/93 15:10	12/01/93 15:30	12/01/93 15:45	12/01/93 15:50	12/02/93 08:35	12/02/93 08:45	12/02/93 09:00	12/01/93 08:55	12/01/93 09:03	12/01/93 09:10	12/01/93 09:15	12/01/93 09:35	
MOISTURE	70320	18.7	14.1	12.3	15.1	17.0	18.3	11.5	21.7	12.7	15.9	13.0	17.3	15.1
%WET WT	ASTM-G													
HYDROCARBONS, PETROLEUM	(TRPH)	98233	1110	<33.1	<32.2	<33.5	<34.0	<35.0	<32.1	<36.1	<32.8	<33.6	168	7830
UG/G-DRY	9071/9073-G													<33.7
BENZENE	34237	<123	<116	<114	<118	<120	<122	<113	<128	<115	<119	<115	<121	<118
UG/KG-DRY	8020-G													
CHLOROBENZENE	34304	<123	<116	<114	<118	<120	<122	<113	<128	<115	<119	<115	<121	<118
UG/KG-DRY	8020-G													
DICHLOROBENZENE, TOTAL	98578	<123	<116	<114	<118	<120	<122	<113	<128	<115	<119	<115	<121	<118
UG/KG-DRY	8020-G													
ETHYLBENZENE	34374	<123	<116	<114	<118	<120	<122	<113	<128	<115	<119	759	<121	<118
UG/KG-DRY	8020-G													
TOLUENE	34483	<123	<116	<114	<118	<120	<122	<113	<128	<115	<119	205	<121	<118
UG/KG-DRY	8020-G													
XYLENES, TOTAL	45510	<123	<116	<114	<118	<120	<122	<113	<128	<115	<119	1770	<121	<118
UG/KG-DRY	CALC													
METHYL TERT BUTYL ETHER	97018	<123	<116	<114	<118	<120	<122	<113	<128	<115	<119	<115	<121	<118
UG/KG-DRY	8020-G													

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# **CLP-TYPE FORMS BY SDG**

## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G44965

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*1210*1	W	VOCS	00/00/00	00/00/00	12/10/93
ICV1	ICV*1210*1	W	VOCS	00/00/00	00/00/00	12/10/93
SP1	SP1*1210*1	W	VOCS	00/00/00	00/00/00	12/10/93
CCS1	CCS*1210*1	W	VOCS	00/00/00	00/00/00	12/10/93
TRPBLK	NABKB1A*3	W	VOCS	12/02/93	12/03/93	12/10/93
SBEB1	NABKB1A*4	W	VOCS	11/30/93	12/03/93	12/10/93
SBEB2	NABKB1A*5	W	VOCS	12/02/93	12/03/93	12/10/93
SBFB1	NABKB1A*7	W	VOCS	12/02/93	12/03/93	12/10/93
CCS2	CCS*1210*2	W	VOCS	00/00/00	00/00/00	12/10/93

Comments:

# **QC SUMMARY DATA**

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G44965

Lab Sample ID: MB\*1210\*1

Lab File ID:

Matrix: (soil/water) WATER

Instrument ID:

Date Analyzed : 12/10/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
TRPBLK	NABKB1A*3	12/10/93
SBEB1	NABKB1A*4	12/10/93
SBEB2	NABKB1A*5	12/10/93
SBFB1	NABKB1A*7	12/10/93

COMMENTS:

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FORM IV ESE

000025

SURROGATE RECOVERIES

Lab Name: ESE

Contract: 7934090G

SDG No.: G44965

Analyte: FLUOROBENZENE, PID      Limits: 60-140

Client Sample ID	Recv
TRPBLK	93
SBEB1	89
SBEB2	98
SBFB1	96

\* Values outside of QC limits

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

TRPBLK

Lab Name: ESE Project No.: 7934090G SDG No.: G44965

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*3

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/10/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

SBEB1

Lab Name: ESE Project No.: 7934090G SDG No.: G44965

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*4

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/10/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

000028

## ANALYSIS DATA SHEET

Client ID

SBEB2

Lab Name: ESE

Project No.: 7934090G

SDG No.: G44965

Matrix: (soil/water) WATER

Lab Sample ID: NABKB1A\*5

Sample wt/vol:

Lab File ID:

%Moisture:

pH:

Dilution Factor: 1.00

Date Analyzed: 12/10/93

Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

000029

## ANALYSIS DATA SHEET

Client ID

SBFB1

Lab Name: ESE Project No.: 7934090G SDG No.: G44965

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*7

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/10/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	NA.
25321-22-6	M-XYLENE (UG/L) _____	NA.
	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

000030

# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G44965

Matrix: (soil/water) WATER Lab Sample ID: MB\*1210\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/10/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	1.00 U
108-88-3	TOLUENE (UG/L) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/L) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/L) _____	1.00 U
	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
95-47-6	O-XYLENE,T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	1.00 U
100-41-4	M-XYLENE (UG/L) _____	1.00 U
25321-22-6	DICHLOROBENZENE, TOT. (UG/L) _____	1.00 U

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FORM I ESE

000031

## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G44965  
Matrix: (soil/water) WATER Lab Sample ID: SP1\*1210\*1  
Sample wt/vol: . Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 12/10/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/L) _____	1.00 U
71-43-2	BENZENE (UG/L) _____	20.0
108-88-3	TOLUENE (UG/L) _____	20.0
108-90-7	CHLOROBENZENE (UG/L) _____	20.5
100-41-4	ETHYLBENZENE (UG/L) _____	20.7
95-47-6	M-AND/OR-P-XYLENE (UG/L) _____	1.00 U
100-41-4	O-XYLENE, T, (UG/L) _____	1.00 U
100-41-4	O-AND/OR-P XYLENE (UG/L) _____	1.00 U
25321-22-6	M-XYLENE (UG/L) _____	1.00 U
	DICHLOROBENZENE, TOT. (UG/L) _____	56.9

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FORM I ESE

000032

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G44965

Analyte: BENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/10/93	0. .99 2.475 4.95 9.9 24.75 49.5 99.	0. 7191. 19066. 41611. 93609. 244494. 490069. 998083.	0.36 1.09 2.29 4.58 9.83 25.0 49.4 99.0	0. 6.99 7.02 7.03 6.98 6.98 6.97 6.95	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G44965

Analyte: TOLUENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/10/93	0. 1. 2.5 5. 10. 25. 50. 100.	0. 6798. 17063. 35679. 82004. 217492. 449296. 929912.	0.47 1.24 2.41 4.53 9.77 24.9 50.2 100.0	0. 9.72 9.74 9.76 9.74 9.74 9.72 9.70	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G44965

Analyte: CHLOROBENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/10/93	0. 1.02 2.55 5.1 10.2 25.5 51. 102.	0. 6702. 16332. 30448. 63041. 167101. 355216. 745562.	0.29 1.30 2.75 4.87 9.74 25.0 51.5 102.	0. 11.94 11.94 11.96 11.98 11.97 11.97 11.93	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G44965

Analyte: ETHYLBENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/10/93	0. 1.04 2.6 5.2 10.4 26. 52. 104.	0. 6138. 15511. 31817. 68313. 194566. 394316. 829682.	0.48 1.31 2.59 4.79 9.70 26.4 52.0 104.	0. 12.32 12.32 12.33 12.34 12.33 12.34 12.31	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G44965

Analyte: DICHLOROBENZENE, TOT.

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/10/93	0. 2.98 14.9 29.8 74.5 149.	0. 29407. 130123. 263744. 673227. 1440405.	-.25 3.19 14.8 30.0 74.4 149.	0.	1.0000

Control Limits: r = 0.995

Comments:

Client ID

REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G44965

Lab Sample ID: SP1\*1210\*1

Date Analyzed: 12/10/93

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
BENZENE	20.0	20.0		100.0	69-127
TOLUENE	20.0	20.0		100.0	80 119
CHLOROBENZENE	20.0	20.5		102.5	
ETHYLBENZENE	20.0	20.7		103.5	
DICHLOROBENZENE, TOT.	60.0	56.9		94.8	

Comments:

FORM V ESE

000038

Client ID

CALIBRATION VERIFICATION

ICV1

Lab Name: ESE

Project No: 7934090G

SDG No: G44965

Lab Sample ID: ICV\*1210\*1

Date Analyzed: 12/10/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
BENZENE	20.0	21.9		9.5	
TOLUENE	20.0	21.3		6.5	
C' BENZENE	20.0	22.0		10.0	
E' BENZENE	20.0	21.7		8.5	
DCBENZENE	60.0	59.4		1.0	

Comments:

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FORM VIII ESE

000039-

## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G45051

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*1209*1	S	VOCS	00/00/00	00/00/00	12/09/93
PBLK2	MB*SOIL*1	S	VOCS	00/00/00	00/00/00	12/09/93
ICV1	ICV*1209*1	S	VOCS	00/00/00	00/00/00	12/09/93
SP1	SP1*SOIL*1	S	VOCS	00/00/00	00/00/00	12/09/93
AA	NABKB1A*9	S	VOCS	12/01/93	12/03/93	12/09/93
AB	NABKB1A*10	S	VOCS	12/01/93	12/03/93	12/09/93
AC	NABKB1A*11	S	VOCS	12/01/93	12/03/93	12/09/93
AD	NABKB1A*37	S	VOCS	11/30/93	12/03/93	12/09/93
AE	NABKB1A*39	S	VOCS	11/30/93	12/03/93	12/09/93
AF	NABKB1A*40	S	VOCS	11/30/93	12/03/93	12/09/93
AG	NABKB1A*41	S	VOCS	11/30/93	12/03/93	12/09/93
CCS1	CCS*1209*1	S	VOCS	00/00/00	00/00/00	12/09/93
AH	NABKB1A*42	S	VOCS	11/30/93	12/03/93	12/09/93
AI	NABKB1A*43	S	VOCS	11/30/93	12/03/93	12/09/93
AJ	NABKB1A*44	S	VOCS	11/30/93	12/03/93	12/09/93
AK	NABKB1A*45	S	VOCS	11/30/93	12/03/93	12/09/93
AL	NABKB1A*49	S	VOCS	11/30/93	12/03/93	12/09/93
AM	NABKB1A*50	S	VOCS	11/30/93	12/03/93	12/09/93
AN	NABKB1A*51	S	VOCS	11/30/93	12/03/93	12/09/93
SP2	SP2*SOIL*1	S	VOCS	00/00/00	00/00/00	12/09/93
CCS2	CCS*1209*2	S	VOCS	00/00/00	00/00/00	12/09/93
5052DP1	NABKB1A*52	S	VOCS	11/30/93	12/03/93	12/09/93
5052DP1MS	SPM1*BKB1A52	S	VOCS	11/30/93	12/03/93	12/09/93
5052DP1MSD	SPM2*BKB1A52	S	VOCS	11/30/93	12/03/93	12/09/93
5052DP2	NABKB1A*53	S	VOCS	11/30/93	12/03/93	12/09/93
5052DP2MS	SPM1*BKB1A53	S	VOCS	11/30/93	12/03/93	12/09/93
5052DP2MSD	SPM2*BKB1A53	S	VOCS	11/30/93	12/03/93	12/09/93
AO	NABKB1A*54	S	VOCS	11/30/93	12/03/93	12/09/93
AP	NABKB1A*56	S	VOCS	11/30/93	12/03/93	12/09/93
CCS3	CCS*1209*3	S	VOCS	00/00/00	00/00/00	12/09/93
AQ	NABKB1A*38	S	VOCS	11/30/93	12/03/93	12/09/93
AR	NABKB1A*55	S	VOCS	11/30/93	12/03/93	12/09/93
CCS4	CCS*1209*4	S	VOCS	00/00/00	00/00/00	12/09/93

Comments:

CROSS REFERENCE TABLE FOR SDG: G45051 12:45:34 19 JAN 1994

THIS SDG INCLUDES THE FOLLOWING BATCHES :  
G45051

PRINTED BY : JEFF SHAMIS

ABBREVIATION COMPLETE NAME

AA	2029SB1-2
AB	2029SB2-2
AC	2029SB3-2
AD	5052SB1-5
AE	5052SB3-5
AF	5052SB4-5
AG	5052SB5-5
AH	5052SB6-5
AI	5052SB7-5
AJ	5052SB8-5
AK	5052SB9-5
AL	5052SB7-10
AM	5052SB6-10
AN	5052SB3-10
AO	5052SB1-10
AP	5052SB4-10
AQ	5052SB2-5
AR	5052SB2-10

000041

# **QC SUMMARY DATA**

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Client ID

5052DP1MS

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45051

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC #	QC LIMITS REC.
BENZENE _____	2020	0.	1900	94.1	74-130
TOLUENE _____	2020	0.	1910	94.6	74 130
CHLOROBENZENE _____	2020	0.	2240	110.9	
ETHYLBENZENE _____	2020	0.	1840	91.1	
DICHLOROBENZENE, TOT. _____	6060	0.	6600	108.9	

COMPOUND	SPIKE ADDED	MSD CONCENTRATION	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
BENZENE _____	2020	1840	91.1	3.2	28	74-130
TOLUENE _____	2020	1920	95.0	0.4	28	74 130
CHLOROBENZENE _____	2020	2140	105.9	4.6		
ETHYLBENZENE _____	2020	1840	91.1	0.0		
DICHLOROBENZENE, TOT. _____	6060	6560	108.3	0.6		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENT:

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Client ID

5052DP2MS

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45051

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC	QC LIMITS REC.
BENZENE	2070	0.	1900	91.8	74-130
TOLUENE	2070	0.	1980	95.7	74 130
CHLOROBENZENE	2070	0.	2150	103.9	
ETHYLBENZENE	2070	0.	1900	91.8	
DICHLOROBENZENE, TOT.	6220	0.	6230	100.2	

COMPOUND	SPIKE ADDED	MSD CONCENTRATION	MSD % REC	% RPD	QC LIMITS RPD	REC.
BENZENE	2070	1700	82.1	11.2	28	74-130
TOLUENE	2070	1750	84.5	12.4	28	74 130
CHLOROBENZENE	2070	1950	94.2	9.8		
ETHYLBENZENE	2070	1680	81.2	12.3		
DICHLOROBENZENE, TOT.	6220	6450	103.7	3.4		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENT:

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G45051

Lab Sample ID: MB\*1209\*1

Lab File ID:

Matrix: (soil/water) SOIL

Instrument ID:

Date Analyzed : 12/09/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
AA	NABKB1A*9	12/09/93
AB	NABKB1A*10	12/09/93
AC	NABKB1A*11	12/09/93
AD	NABKB1A*37	12/09/93
AQDL	NABKB1A*38	12/09/93
AE	NABKB1A*39	12/09/93
AF	NABKB1A*40	12/09/93
AG	NABKB1A*41	12/09/93
AH	NABKB1A*42	12/09/93
AI	NABKB1A*43	12/09/93
AJ	NABKB1A*44	12/09/93
AK	NABKB1A*45	12/09/93
AL	NABKB1A*49	12/09/93
AM	NABKB1A*50	12/09/93
AN	NABKB1A*51	12/09/93
5052DP1	NABKB1A*52	12/09/93
5052DP1MS	SPM1*NABKB1A*52	12/09/93
5052DP1MSD	SPM2*NABKB1A*52	12/09/93
5052DP2	NABKB1A*53	12/09/93
5052DP2MS	SPM1*NABKB1A*53	12/09/93
5052DP2MSD	SPM2*NABKB1A*53	12/09/93
AO	NABKB1A*54	12/09/93
ARDL	NABKB1A*55	12/09/93
AP	NABKB1A*56	12/09/93

COMMENTS:

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FORM IV ESE

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## SURROGATE RECOVERIES

Lab Name: ESE

Contract: 7934090G

SDG No.: G45051

Analyte: FLUOROBENZENE, PID      Limits: 60-140

Client Sample ID	Recv
AA	110
AB	107
AC	106
AD	105
AE	106
AF	106
AG	103
AH	102
AI	105
AJ	105
AK	103
AL	100
AM	103
AN	106
5052DP1	104
5052DP1MS	114
5052DP1MSD	103
5052DP2	107
5052DP2MS	109
5052DP2MSD	106
AO	99
AP	104
AQ	86
AR	94

\* Values outside of QC limits

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

AA

Lab Name: ESE Project No.: 7934090G SDG No.: G45051

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*9

Sample wt/vol: 10. Lab File ID:

%Moisture: 13.2 pH: Dilution Factor: 1.00

Date Analyzed: 12/09/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	115. U
71-43-2	BENZENE (UG/KG-DRY)	115. U
108-88-3	TOLUENE (UG/KG-DRY)	115. U
108-90-7	CHLOROBENZENE (UG/KG-DRY)	115. U
100-41-4	ETHYLBENZENE (UG/KG-DRY)	115. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	115. U
25321-22-6	O-XYLENE (UG/KG-DRY)	115. U
	DICHLOROBENZENE, TOT. (UG/KG-D)	115. U
	O-AND/OR-P XYLENE (UG/KG-DRY)	NA.
100-41-4	M-XYLENE (UG/KG-DRY)	NA.

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AB

Lab Name: ESE Project No.: 7934090G SDG No.: G45051

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*10

Sample wt/vol: 10. Lab File ID:

%Moisture: 17.2 pH: Dilution Factor: 1.00

Date Analyzed: 12/09/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	121. U
71-43-2	BENZENE (UG/KG-DRY) _____	121. U
108-88-3	TOLUENE (UG/KG-DRY) _____	121. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	121. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	121. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	121. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	121. U
	DICHLOROBENZENE, TOT. (UG/KG-D)	121. U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	NA.
100-41-4	M-XYLENE (UG/KG-DRY) _____	NA.

## ANALYSIS DATA SHEET

Client ID

AC

Lab Name: ESE Project No.: 7934090G SDG No.: G45051

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*11

Sample wt/vol: 10. Lab File ID:

%Moisture: 24.9 pH: Dilution Factor: 1.00

Date Analyzed: 12/09/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	133. U
71-43-2	BENZENE (UG/KG-DRY) _____	133. U
108-88-3	TOLUENE (UG/KG-DRY) _____	133. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	133. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	133. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	133. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	133. U
	DICHLOROBENZENE, TOT. (UG/KG-D)	133. U
100-41-4	O-AND/OR-P XYLENE (UG/KG-DRY) _____	NA.
	M-XYLENE (UG/KG-DRY) _____	NA.

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FORM I ESE

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# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G45051

Matrix: (soil/water) SOIL Lab Sample ID: MB\*1209\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/09/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.00 U
71-43-2	BENZENE (UG/KG-DRY)	1.00 U
108-88-3	TOLUENE (UG/KG-DRY)	1.00 U
108-90-7	CHLOROBENZENE (UG/KG-DRY)	1.00 U
100-41-4	ETHYLBENZENE (UG/KG-DRY)	1.00 U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	1.00 U
25321-22-6	O-XYLENE (UG/KG-DRY)	1.00 U
	DICHLOROBENZENE, TOT. (UG/KG-D)	1.00 U
	O-AND/OR-P XYLENE (UG/KG-DRY)	NA
100-41-4	M-XYLENE (UG/KG-DRY)	NA

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

PBLK2

Lab Name: ESE Project No.: 7934090G SDG No.: G45051

Matrix: (soil/water) SOIL Lab Sample ID: MB\*SOIL\*1

Sample wt/vol: 10. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/09/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
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1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.00	U
71-43-2	BENZENE (UG/KG-DRY) _____	1.00	U
108-88-3	TOLUENE (UG/KG-DRY) _____	1.00	U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	1.00	U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	1.00	U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	1.00	U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	1.00	U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D) O-AND/OR-P XYLENE (UG/KG-DRY) _____	1.00	NA
	M-XYLENE (UG/KG-DRY) _____		NA

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45051  
 Matrix: (soil/water) SOIL Lab Sample ID: SP1\*SOIL\*1  
 Sample wt/vol: 10. Lab File ID:  
 %Moisture: pH: Dilution Factor: 1.00  
 Date Analyzed: 12/09/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.00 U
71-43-2	BENZENE (UG/KG-DRY)	2040.
108-88-3	TOLUENE (UG/KG-DRY)	2080.
108-90-7	CHLOROBENZENE (UG/KG-DRY)	2120.
100-41-4	ETHYLBENZENE (UG/KG-DRY)	2060.
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	1.00 U
25321-22-6	O-XYLENE (UG/KG-DRY)	1.00 U
	DICHLOROBENZENE, TOT. (UG/KG-D)	6390.
	O-AND/OR-P XYLENE (UG/KG-DRY)	NA U
100-41-4	M-XYLENE (UG/KG-DRY)	NA U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

SP2

Lab Name: ESE Project No.: 7934090G SDG No.: G45051

Matrix: (soil/water) SOIL Lab Sample ID: SP2\*SOIL\*1

Sample wt/vol: 10. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/09/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.00 U
71-43-2	BENZENE (UG/KG-DRY) _____	1910.
108-88-3	TOLUENE (UG/KG-DRY) _____	1960.
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	2400.
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	1920.
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	1.00 U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	1.00 U
	DICHLOROBENZENE, TOT. (UG/KG-D)	7170.
	O-AND/OR-P XYLENE (UG/KG-DRY)	NA U
100-41-4	M-XYLENE (UG/KG-DRY) _____	NA U

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FORM I ESE

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## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45051

Analyte: METHYL-T-BUT' ETHER

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/09/93	0. 1. 2.5 5. 10. 25. 100.	0. 2077. 5317. 11188. 22472. 69451. 311042.	0.589 1.36 2.55 4.71 8.82 25.5 100.0	0. 5.13 5.13 5.07 5.07 5.05 5.03	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45051

Analyte: BENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/09/93	0. .99 2.475 4.95 9.9 24.75 49.5 99.	0. 8691. 21761. 45941. 99009. 263853. 552036. 1061940.	0.610 1.37 2.51 4.63 9.31 24.0 50.3 98.8	0. 7.09 7.08 7.03 7.04 7.02 6.99 6.99	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45051

Analyte: TOLUENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/09/93	0. 1. 2.5 5. 10. 25. 50. 100.	0. 7208. 18539. 39264. 85743. 233306. 484286. 990452.	0.518 1.28 2.47 4.64 9.51 24.8 50.3 99.9	0. 9.79 9.79 9.76 9.78 9.77 9.75 9.74	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45051

Analyte: CHLOROBENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/09/93	0. 1.02 2.55 5.1 10.2 25.5 102.	0. 5010. 13368. 28687. 60688. 170162. 786440.	0.422 1.20 2.48 4.83 9.68 25.8 102.	0. 12.07 12.05 12.02 12.05 12.04 12.05	1.0000

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45051

Analyte: ETHYLBENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/09/93	0. 1.04 2.6 5.2 10.4 26. 52. 104.	0. 6270. 16710. 35856. 78193. 214315. 436861. 861135.	0.608 1.34 2.56 4.81 9.78 25.8 52.4 104.	0. 12.37 12.37 12.33 12.35 12.35 12.36 12.36	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45051

Analyte: M-AND/OR-P XYLENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/09/93	0. 2. 5. 10. 20. 50.	0. 12436. 32346. 73006. 161713. 450515.	0.422 2.03 4.59 9.69 20.3 50.0	0. 12.71 12.71 12.68 12.70 12.71	.9998
2	12/09/93	0. 2. 5. 10. 20. 50. 100. 200.	0. 12436. 32346. 73006. 161713. 450515. 913185. 1783283.	1.37 2.69 4.81 9.14 18.6 49.8 101. 200.	0. 12.71 12.71 12.68 12.70 12.71 12.71 12.72	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45051

Analyte: O-XYLENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/09/93	0. 1.1 2.75 5.5 11. 27.5 110.	0. 5207. 13833. 31466. 69140. 194877. 809046.	0.628 1.36 2.58 5.07 10.4 27.9 110.	0. 13.41 13.41 13.38 13.39 13.39 13.42	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45051

Analyte: DICHLOROBENZENE, TOT.

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/09/93	0. 2.98 7.45 14.9 29.8 74.5 149. 298.	0. 22915. 57257. 114187. 270173. 706895. 1307334. 3009311.	-.342 2.39 6.47 13.2 31.4 80.7 144. 299.	0. . . . . . . . . . .	.9996

Control Limits: r = 0.995

Comments:

Client ID

REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G45051

Lab Sample ID: SP1\*SOIL\*1

Date Analyzed: 12/09/93

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
BENZENE	2000.	2040.		102.0	74-130
TOLUENE	2000.	2080.		104.0	74 130
CHLOROBENZENE	2000.	2120.		106.0	
ETHYLBENZENE	2000.	2060.		103.0	
DICHLOROBENZENE, TOT.	6000.	6390.		106.5	

Comments:

FORM V ESE

000082

Client ID

REFERENCE STANDARD

SP2

Lab Name: ESE

SDG No: G45051

Lab Sample ID: SP2\*SOIL\*1

Date Analyzed: 12/09/93

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
BENZENE	2000.	1910.		95.5	74-130
TOLUENE	2000.	1960.		98.0	74 130
CHLOROBENZENE	2000.	2400.		120.0	
ETHYLBENZENE	2000.	1920.		96.0	
DICHLOROBENZENE, TOT.	6000.	7170.		119.5	

Comments:

FORM V ESE

000083

Client ID

## CALIBRATION VERIFICATION

ICV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45051

Lab Sample ID: ICV\*1209\*1

Date Analyzed: 12/09/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
MTBE	20.0	20.9		4.5	
BENZENE	20.0	20.6		3.0	
TOLUENE	20.0	21.0		5.0	
CHL'BENZENE	20.0	23.8		19.0	
E'BENZENE	20.0	21.1		5.5	
M &/OR P XYL	40.0	43.4		8.5	
O XYLENE	20.0	20.9		4.5	
DCB, T	60.0	72.6		21.0	

Comments:

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FORM VIII ESE

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## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G45595

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*1213*1	S	VOCS	00/00/00	00/00/00	12/12/93
PBLK2	MB*SOIL*1	S	VOCS	00/00/00	00/00/00	12/13/93
ICV1	ICV*1213*1	S	VOCS	00/00/00	00/00/00	12/13/93
SP1	SP1*SOIL*1	S	VOCS	00/00/00	00/00/00	12/13/93
AA	NABKB1A*48	S	VOCS	11/30/93	12/03/93	12/13/93
AB	NABKB1A*12	S	VOCS	12/01/93	12/03/93	12/13/93
AC	NABKB1A*13	S	VOCS	12/01/93	12/03/93	12/13/93
AD	NABKB1A*14	S	VOCS	12/01/93	12/03/93	12/13/93
2029DP1	NABKB1A*24	S	VOCS	12/02/93	12/03/93	12/13/93
2029DP1MS	SPM1*BKB1A24	S	VOCS	12/02/93	12/03/93	12/13/93
2029DP1MSD	SPM2*BKB1A24	S	VOCS	12/02/93	12/03/93	12/13/93
CCS1	CCS*1213*1	S	VOCS	00/00/00	00/00/00	12/13/93
AE	NABKB1A*15	S	VOCS	12/01/93	12/03/93	12/13/93
AF	NABKB1A*16	S	VOCS	12/02/93	12/03/93	12/13/93
AG	NABKB1A*17	S	VOCS	12/02/93	12/03/93	12/13/93
AH	NABKB1A*18	S	VOCS	12/02/93	12/03/93	12/13/93
AI	NABKB1A*19	S	VOCS	12/02/93	12/03/93	12/13/93
AJ	NABKB1A*20	S	VOCS	12/02/93	12/03/93	12/13/93
AK	NABKB1A*21	S	VOCS	12/02/93	12/03/93	12/13/93
AL	NABKB1A*22	S	VOCS	12/02/93	12/03/93	12/13/93
AM	NABKB1A*23	S	VOCS	12/02/93	12/03/93	12/13/93
2029DP2	NABKB1A*25	S	VOCS	12/01/93	12/03/93	12/13/93
CCS2	CCS*1213*2	S	VOCS	00/00/00	00/00/00	12/13/93
AN	NABKB1A*26	S	VOCS	12/01/93	12/03/93	12/13/93
AO	NABKB1A*27	S	VOCS	12/01/93	12/03/93	12/13/93
AP	NABKB1A*60	S	VOCS	12/01/93	12/03/93	12/13/93
AQ	NABKB1A*61	S	VOCS	12/01/93	12/03/93	12/13/93
AR	NABKB1A*62	S	VOCS	11/30/93	12/03/93	12/13/93
CCS3	CCS*1213*3	S	VOCS	00/00/00	00/00/00	12/13/93

Comments:

CROSS REFERENCE TABLE FOR SDG: G45595 12:51:04 19 JAN 1994

THIS SDG INCLUDES THE FOLLOWING BATCHES :  
G45595

PRINTED BY : JEFF SHAMIS

ABBREVIATION COMPLETE NAME

AA	5052SB8-10
AB	2029SB4-2
AC	2029SB5-2
AD	2029SB6-2
AE	2029SB7-2
AF	2029SB8-2
AG	2029SB9-2
AH	2029SB10-2
AI	2029SB11-2
AJ	2029DUP2-2
AK	2029SB13-2
AL	2029SB14-2
AM	2029SB14-4
AN	3022SB1-2
AO	3022SB2-2
AP	2029SB1-5
AQ	3022SB1-6
AR	5052SB5-10

000086

# **QC SUMMARY DATA**

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Client ID

2029DP1MS

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45595

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC #	QC LIMITS REC.
BENZENE	2040	0.	2030	99.5	74-130
TOLUENE	2040	0.	1960	96.1	74 130
CHLOROBENZENE	2040	0.	1940	95.1	
ETHYLBENZENE	2040	0.	1970	96.6	

COMPOUND	SPIKE ADDED	MSD CONCENTRATION	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
BENZENE	2040	1930	94.6	5.0	28	74-130
TOLUENE	2040	1950	95.6	0.5	28	74 130
CHLOROBENZENE	2040	1940	95.1	0.0		
ETHYLBENZENE	2040	1960	96.1	0.5		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENT:

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G45595

Lab Sample ID: MB\*1213\*1

Lab File ID:

Matrix: (soil/water) SOIL

Instrument ID:

Date Analyzed : 12/12/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
AA	NABKB1A*48	12/13/93
AB	NABKB1A*12	12/13/93
AC	NABKB1A*13	12/13/93
AD	NABKB1A*14	12/13/93
2029DP1	NABKB1A*24	12/13/93
2029DP1MS	SPM1*NABKB1A*24	12/13/93
2029DP1MSD	SPM2*NABKB1A*24	12/13/93
AE	NABKB1A*15	12/13/93
AF	NABKB1A*16	12/13/93
AG	NABKB1A*17	12/13/93
AH	NABKB1A*18	12/13/93
AI	NABKB1A*19	12/13/93
AJ	NABKB1A*20	12/13/93
AK	NABKB1A*21	12/13/93
AL	NABKB1A*22	12/13/93
AM	NABKB1A*23	12/13/93
2029DP2	NABKB1A*25	12/13/93
AN	NABKB1A*26	12/13/93
AO	NABKB1A*27	12/13/93
AP	NABKB1A*60	12/13/93
AQ	NABKB1A*61	12/13/93
AR	NABKB1A*62	12/13/93

COMMENTS :

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SURROGATE RECOVERIES

Lab Name: ESE

Contract: 7934090G

SDG No.: G45595

Analyte: FLUOROBENZENE, PID

Limits: 60-140

Client Sample ID	Recv
AA	95
AB	93
AC	87
AD	87
2029DP1	91
2029DP1MS	100
2029DP1MSD	96
AE	88
AF	85
AG	88
AH	92
AI	92
AJ	88
AK	89
AL	88
AM	92
2029DP2	94
AN	91
AO	87
AP	90
AQ	92
AR	90

\* Values outside of QC limits

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

AB

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*12

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 18.8 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	123. U
71-43-2	BENZENE (UG/KG-DRY) _____	123. U
108-88-3	TOLUENE (UG/KG-DRY) _____	123. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	123. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	123. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	123. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	123. U
	DICHLOROBENZENE, TOT. (UG/KG-D)	123. U
	O-AND/OR-P XYLENE (UG/KG-DRY)	123. U
100-41-4	M-XYLENE (UG/KG-DRY) _____	123. U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AC

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*13

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 18.7 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	123. U
71-43-2	BENZENE (UG/KG-DRY) _____	123. U
108-88-3	TOLUENE (UG/KG-DRY) _____	123. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	123. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	123. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	123. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	123. U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D) _____	123. U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	123. U
	M-XYLENE (UG/KG-DRY) _____	123. U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AD

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*14

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 14.1 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	116. U
71-43-2	BENZENE (UG/KG-DRY)	116. U
108-88-3	TOLUENE (UG/KG-DRY)	116. U
108-90-7	CHLOROBENZENE (UG/KG-DRY)	116. U
100-41-4	ETHYLBENZENE (UG/KG-DRY)	116. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	116. U
25321-22-6	O-XYLENE (UG/KG-DRY)	116. U
	DICHLOROBENZENE, TOT. (UG/KG-D)	116. U
	O-AND/OR-P XYLENE (UG/KG-DRY)	116. U
100-41-4	M-XYLENE (UG/KG-DRY)	116. U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

2029DP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*24

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 13.2 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
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1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	115.	U
71-43-2	BENZENE (UG/KG-DRY) _____	115.	U
108-88-3	TOLUENE (UG/KG-DRY) _____	115.	U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	115.	U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	115.	U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	115.	U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	115.	U
	DICHLOROBENZENE, TOT. (UG/KG-D)	115.	U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	115.	U
100-41-4	M-XYLENE (UG/KG-DRY) _____	115.	U

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FORM I ESE

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Client ID

## ANALYSIS DATA SHEET

AE

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*15

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 12.3 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	114. U
71-43-2	BENZENE (UG/KG-DRY) _____	114. U
108-88-3	TOLUENE (UG/KG-DRY) _____	114. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	114. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	114. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	114. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	114. U
	DICHLOROBENZENE, TOT. (UG/KG-D)	114. U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	114. U
100-41-4	M-XYLENE (UG/KG-DRY) _____	114. U

## ANALYSIS DATA SHEET

Client ID

AF

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*16

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 17.0 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
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1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	120.	U
71-43-2	BENZENE (UG/KG-DRY) _____	120.	U
108-88-3	TOLUENE (UG/KG-DRY) _____	120.	U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	120.	U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	120.	U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	120.	U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	120.	U
	DICHLOROBENZENE, TOT. (UG/KG-D)	120.	U
100-41-4	O-AND/OR-P XYLENE (UG/KG-DRY) _____	120.	U
	M-XYLENE (UG/KG-DRY) _____	120.	U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AG

Lab Name: ESE Project No.: 7934090G SDG No.: G45595  
Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*17  
Sample wt/vol: 10.0. Lab File ID:  
%Moisture: 11.5 pH: Dilution Factor: 1.00  
Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	113. U
71-43-2	BENZENE (UG/KG-DRY) _____	113. U
108-88-3	TOLUENE (UG/KG-DRY) _____	113. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	113. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	113. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	113. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	113. U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D) O-AND/OR-P XYLENE (UG/KG-DRY) _____	113. U
	M-XYLENE (UG/KG-DRY) _____	113. U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AH

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*18

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 16.8 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	120. U
71-43-2	BENZENE (UG/KG-DRY) _____	120. U
108-88-3	TOLUENE (UG/KG-DRY) _____	120. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	120. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	120. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	120. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	120. U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D) _____	120. U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	120. U
	M-XYLENE (UG/KG-DRY) _____	120. U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AI

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*19

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 19.9 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	125. U
71-43-2	BENZENE (UG/KG-DRY) _____	125. U
108-88-3	TOLUENE (UG/KG-DRY) _____	125. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	125. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	125. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	125. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	125. U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D)	125. U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	125. U
	M-XYLENE (UG/KG-DRY) _____	125. U

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FORM I ESE

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## ANALYSIS DATA SHEET

Client ID

AJ

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*20

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 12.2 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	114. U
71-43-2	BENZENE (UG/KG-DRY) _____	114. U
108-88-3	TOLUENE (UG/KG-DRY) _____	114. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	114. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	114. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	114. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	114. U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D) _____	114. U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	114. U
	M-XYLENE (UG/KG-DRY) _____	114. U

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FORM I ESE

000100

## ANALYSIS DATA SHEET

Client ID

AK

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*21

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 14.0 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
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1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	116. U
71-43-2	BENZENE (UG/KG-DRY) _____	116. U
108-88-3	TOLUENE (UG/KG-DRY) _____	116. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	116. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	116. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	116. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	116. U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D) O-AND/OR-P XYLENE (UG/KG-DRY) _____	116. U
	M-XYLENE (UG/KG-DRY) _____	116. U

## ANALYSIS DATA SHEET

Client ID

AL

Lab Name: ESE Project No.: 7934090G SDG No.: G45595  
Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*22  
Sample wt/vol: 10.0. Lab File ID:  
%Moisture: 14.5 pH: Dilution Factor: 1.00  
Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	117. U
71-43-2	BENZENE (UG/KG-DRY) _____	117. U
108-88-3	TOLUENE (UG/KG-DRY) _____	117. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	117. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	117. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	117. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	117. U
	DICHLOROBENZENE, TOT. (UG/KG-D)	117. U
100-41-4	O-AND/OR-P XYLENE (UG/KG-DRY) _____	117. U
	M-XYLENE (UG/KG-DRY) _____	117. U

## ANALYSIS DATA SHEET

Client ID

AM

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*23

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 17.6 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	121. U
71-43-2	BENZENE (UG/KG-DRY) _____	121. U
108-88-3	TOLUENE (UG/KG-DRY) _____	121. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	121. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	121. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	121. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	121. U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D) O-AND/OR-P XYLENE (UG/KG-DRY) _____	121. U
	M-XYLENE (UG/KG-DRY) _____	121. U

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FORM I ESE

000103

## ANALYSIS DATA SHEET

Client ID

2029DP2

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*25

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 17.9 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	122. U
71-43-2	BENZENE (UG/KG-DRY) _____	122. U
108-88-3	TOLUENE (UG/KG-DRY) _____	122. U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	122. U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	122. U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	122. U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	122. U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D)	122. U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	122. U
	M-XYLENE (UG/KG-DRY) _____	122. U

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FORM I ESE

000104

# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: MB\*1213\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/12/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.00 U
71-43-2	BENZENE (UG/KG-DRY) _____	1.00 U
108-88-3	TOLUENE (UG/KG-DRY) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	1.00 U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	1.00 U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	1.00 U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D) _____	1.00 U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	1.00 U
	M-XYLENE (UG/KG-DRY) _____	1.00 U

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FORM I ESE

000110

## ANALYSIS DATA SHEET

Client ID

PBLK2

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: MB\*SOIL\*1

Sample wt/vol: 10.0. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
---------	----------	---

1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.00 U
71-43-2	BENZENE (UG/KG-DRY) _____	1.00 U
108-88-3	TOLUENE (UG/KG-DRY) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	1.00 U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	1.00 U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	1.00 U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D) _____	1.00 U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	1.00 U
	M-XYLENE (UG/KG-DRY) _____	1.00 U

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FORM I ESE

000111

## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: SP1\*SOIL\*1

Sample wt/vol: 10.0. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.00 U
71-43-2	BENZENE (UG/KG-DRY)	2070.
108-88-3	TOLUENE (UG/KG-DRY)	2020.
108-90-7	CHLOROBENZENE (UG/KG-DRY)	2010.
100-41-4	ETHYLBENZENE (UG/KG-DRY)	2130.
	M-AND/OR-P XYLENE (UG/KG-DRY)	1.00 U
95-47-6	O-XYLENE (UG/KG-DRY)	1.00 U
25321-22-6	DICHLOROBENZENE, TOT. (UG/KG-D)	1.00 U
	O-AND/OR-P XYLENE (UG/KG-DRY)	1.00 U
100-41-4	M-XYLENE (UG/KG-DRY)	1.00 U

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FORM I ESE

000112-

## ANALYSIS DATA SHEET

Client ID

2029DP1MS

Lab Name: ESE Project No.: 7934090G SDG No.: G45595  
 Matrix: (soil/water) SOIL Lab Sample ID: SPM1\*NABKB1A\*24  
 Sample wt/vol: 10.0. Lab File ID:  
 %Moisture: 13.2 pH: Dilution Factor: 1.00  
 Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.15
71-43-2	BENZENE (UG/KG-DRY)	2040.
108-88-3	TOLUENE (UG/KG-DRY)	1980.
108-90-7	CHLOROBENZENE (UG/KG-DRY)	1970.
100-41-4	ETHYLBENZENE (UG/KG-DRY)	2000.
	M-AND/OR-P XYLENE (UG/KG-DRY)	1.15
95-47-6	O-XYLENE (UG/KG-DRY)	1.15
25321-22-6	DICHLOROBENZENE, TOT. (UG/KG-D)	1.15
	O-AND/OR-P XYLENE (UG/KG-DRY)	1.15
100-41-4	M-XYLENE (UG/KG-DRY)	1.15

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FORM I ESE

000113

## ANALYSIS DATA SHEET

Client ID

2029DP1MSD

Lab Name: ESE Project No.: 7934090G SDG No.: G45595

Matrix: (soil/water) SOIL Lab Sample ID: SPM2\*NABKB1A\*24

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 13.2 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.15
71-43-2	BENZENE (UG/KG-DRY)	1940.
108-88-3	TOLUENE (UG/KG-DRY)	1970.
108-90-7	CHLOROBENZENE (UG/KG-DRY)	1970.
100-41-4	ETHYLBENZENE (UG/KG-DRY)	1990.
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	1.15
25321-22-6	O-XYLENE (UG/KG-DRY)	1.15
	DICHLOROBENZENE, TOT. (UG/KG-D)	1.15
100-41-4	O-AND/OR-P XYLENE (UG/KG-DRY)	1.15
	M-XYLENE (UG/KG-DRY)	1.15

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45595

Analyte: METHYL-T-BUT' ETHER

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 1. 2.5 5. 10. 25. 50.	0. 2129. 6026. 10013. 22153. 63804. 139117.	0.276 1.18 2.82 4.48 9.44 25.4 49.9	. 5.04 5.04 5.06 5.09 5.05 5.03	.9998

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45595

Analyte: BENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. .99 2.475 4.95 9.9 24.75 49.5	0. 7029. 26016. 42562. 89437. 244484. 524360.	0.121 0.879 2.91 4.67 9.57 24.9 49.5	0. 7.00 6.99 7.03 7.04 6.99 6.98	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45595

Analyte: TOLUENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 1. 2.5 5. 10. 25. 50.	0. 6260. 22312. 35818. 78714. 217473. 475014.	0.181 0.955 2.93 4.57 9.68 25.2 50.0	0. 9.76 9.77 9.79 9.76 9.74 9.73	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45595

Analyte: CHLOROBENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 1.02 2.55 5.1 10.2 25.5 51.	0. 5142. 20112. 33183. 68240. 200328. 427274.	0.300 0.999 3.02 4.78 9.41 25.9 50.9	0. 12.07 12.06 12.07 12.03 12.03 12.03	.9997

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45595

Analyte: ETHYLBENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 1.04 2.6 5.2 10.4 26. 52.	0. 5189. 19671. 32090. 71504. 200231. 429149.	0.299 1.02 3.00 4.69 9.97 26.3 51.9	0. 12.38 12.37 12.36 12.35 12.35 12.35	.9998

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45595

Analyte: M-AND/OR-P XYLENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 2. 5. 10. 20. 50. 100.	0. 10277. 40164. 61969. 146828. 420321. 894087.	0.830 2.12 5.86 8.57 19.0 50.8 99.9	0. 12.73 12.73 12.71 12.70 12.70 12.70	.9997

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45595

Analyte: O-XYLENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 1.1 2.75 5.5 11. 27.5 55.	0. 4437. 16936. 25591. 61860. 182188. 394021.	0.525 1.24 3.25 4.62 10.3 28.0 54.9	0. 13.44 13.41 13.40 13.39 13.39 13.41	.9996

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45595

Analyte: DICHLOROBENZENE, TOT.

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/13/93	0. 2.98 7.45 14.9 29.8 74.5 149. 298.	0. 22915. 57257. 114187. 270173. 706895. 1307334. 3009311.	-.342 2.39 6.47 13.2 31.4 80.7 144. 299.	0. . . . . . . . . . .	.9996

Control Limits: r = 0.995

Comments:

Client ID

REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G45595

Lab Sample ID: SP1\*SOIL\*1

Date Analyzed: 12/13/93

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
BENZENE	2000.	2070.		103.5	74-130
TOLUENE	2000.	2020.		101.0	74 130
CHLOROBENZENE	2000.	2010.		100.5	
ETHYLBENZENE	2000.	2130.		106.5	

Comments:

FORM V ESE

000123

Client ID

## CALIBRATION VERIFICATION

ICV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45595

Lab Sample ID: ICV\*1213\*1

Date Analyzed: 12/13/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
MTBE	20.0	19.3		3.5	
BENZENE	20.0	21.9		9.5	
TOLUENE	20.0	21.8		9.0	
CHL'BENZENE	20.0	21.2		6.0	
E'BENZENE	20.0	21.3		6.5	
M &/OR P XYL	40.0	42.8		7.0	
O XYLENE	20.0	20.8		4.0	

Comments:

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FORM VIII ESE

000124

## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G45613

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*1213*2	S	VOCS	00/00/00	00/00/00	12/12/93
PBLK2	MB*SOIL*2	S	VOCS	00/00/00	00/00/00	12/13/93
ICV1	ICV*1213*2	S	VOCS	00/00/00	00/00/00	12/13/93
SP1	SP1*SOIL*2	S	VOCS	00/00/00	00/00/00	12/13/93
AA	NABKB1A*46	S	VOCS	12/01/93	12/03/93	12/13/93
3022DP1	NABKB1A*36	S	VOCS	12/01/93	12/03/93	12/13/93
3022DP1MS	SPM1*BKB1A36	S	VOCS	12/01/93	12/03/93	12/13/93
3022DP1MSD	SPM2*BKB1A36	S	VOCS	12/01/93	12/03/93	12/13/93
AB	NABKB1A*35	S	VOCS	12/01/93	12/03/93	12/13/93
AC	NABKB1A*34	S	VOCS	12/01/93	12/03/93	12/13/93
AD	NABKB1A*33	S	VOCS	12/01/93	12/03/93	12/13/93
AE	NABKB1A*32	S	VOCS	12/02/93	12/03/93	12/13/93
AF	NABKB1A*31	S	VOCS	12/01/93	12/03/93	12/13/93
AG	NABKB1A*30	S	VOCS	12/01/93	12/03/93	12/13/93
AH	NABKB1A*29	S	VOCS	12/01/93	12/03/93	12/13/93
AI	NABKB1A*28	S	VOCS	12/01/93	12/03/93	12/13/93
CCS1	CCS*1213*1	S	VOCS	00/00/00	00/00/00	12/13/93

Comments:

CROSS REFERENCE TABLE FOR SDG: G45613 12:53:21 19 JAN 1994

THIS SDG INCLUDES THE FOLLOWING BATCHES :  
G45613

PRINTED BY : JEFF SHAMIS

ABBREVIATION COMPLETE NAME

AA	2029SB7-4
AB	3022SB2-5
AC	3022SB3-5
AD	3022SB4-5
AE	2029SB8-4
AF	3022SB6-2
AG	3022SB5-2
AH	3022SB4-2
AI	3022SB3-2

## **QC SUMMARY DATA**

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G45613

Lab Sample ID: MB\*1213\*2

Lab File ID:

Matrix: (soil/water) SOIL

Instrument ID:

Date Analyzed : 12/12/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
AA	NABKB1A*46	12/13/93
3022DP1	NABKB1A*36	12/13/93
3022DP1MS	SPM1*NABKB1A*36	12/13/93
3022DP1MSD	SPM2*NABKB1A*36	12/13/93
AB	NABKB1A*35	12/13/93
AC	NABKB1A*34	12/13/93
AD	NABKB1A*33	12/13/93
AE	NABKB1A*32	12/13/93
AF	NABKB1A*31	12/13/93
AG	NABKB1A*30	12/13/93
AH	NABKB1A*29	12/13/93
AI	NABKB1A*28	12/13/93

COMMENTS :

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FORM IV ESE

000128

SURROGATE RECOVERIES

Lab Name: ESE

Contract: 7934090G

SDG No.: G45613

Analyte: FLUOROBENZENE, PID      Limits: 60-140

Client Sample ID	Recv
AA	100
3022DP1	97
3022DP1MS	97
3022DP1MSD	104
AB	85
AC	96
AD	100
AE	103
AF	100
AG	97
AH	91
AI	100

\* Values outside of QC limits

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

AA

Lab Name: ESE Project No.: 7934090G SDG No.: G45613

Matrix: (soil/water) SOIL Lab Sample ID: NABKB1A\*46

Sample wt/vol: 10.0. Lab File ID:

%Moisture: 15.1 pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 12/03/93

CAS NO.	COMPOUND		Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	118.	U
71-43-2	BENZENE (UG/KG-DRY) _____	118.	U
108-88-3	TOLUENE (UG/KG-DRY) _____	118.	U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	118.	U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	118.	U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	118.	U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	118.	U
	DICHLOROBENZENE, TOT. (UG/KG-D)	118.	U
	O-AND/OR-P XYLENE (UG/KG-DRY)	118.	U
100-41-4	M-XYLENE (UG/KG-DRY) _____	118.	U

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FORM I ESE

000130-

# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G45613

Matrix: (soil/water) SOIL Lab Sample ID: MB\*1213\*2

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/12/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.00 U
71-43-2	BENZENE (UG/KG-DRY) _____	1.00 U
108-88-3	TOLUENE (UG/KG-DRY) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	1.00 U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	1.00 U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	1.00 U
	DICHLOROBENZENE, TOT. (UG/KG-D)	1.00 U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	1.00 U
100-41-4	M-XYLENE (UG/KG-DRY) _____	1.00 U

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FORM I ESE

000140

## ANALYSIS DATA SHEET

Client ID

PBLK2

Lab Name: ESE Project No.: 7934090G SDG No.: G45613

Matrix: (soil/water) SOIL Lab Sample ID: MB\*SOIL\*2

Sample wt/vol: 10.0. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.00 U
71-43-2	BENZENE (UG/KG-DRY) _____	1.00 U
108-88-3	TOLUENE (UG/KG-DRY) _____	1.00 U
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	1.00 U
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	1.00 U
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY) _____	1.00 U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	1.00 U
	DICHLOROBENZENE, TOT. (UG/KG-D)	1.00 U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	1.00 U
100-41-4	M-XYLENE (UG/KG-DRY) _____	1.00 U

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FORM I ESE

000141

## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45613

Matrix: (soil/water) SOIL Lab Sample ID: SP1\*SOIL\*2

Sample wt/vol: 10.0. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/13/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
1634-04-4	METHYL-T-BUT' ETHER (UG/KG-DRY)	1.00 U
71-43-2	BENZENE (UG/KG-DRY) _____	2120.
108-88-3	TOLUENE (UG/KG-DRY) _____	2120.
108-90-7	CHLOROBENZENE (UG/KG-DRY) _____	2150.
100-41-4	ETHYLBENZENE (UG/KG-DRY) _____	2180.
95-47-6	M-AND/OR-P XYLENE (UG/KG-DRY)	1.00 U
25321-22-6	O-XYLENE (UG/KG-DRY) _____	1.00 U
100-41-4	DICHLOROBENZENE, TOT. (UG/KG-D)	1.00 U
	O-AND/OR-P XYLENE (UG/KG-DRY) _____	1.00 U
	M-XYLENE (UG/KG-DRY) _____	1.00 U

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FORM I ESE

000142

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45613

Analyte: METHYL-T-BUT' ETHER

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 1. 2.5 5. 10. 25. 50.	0. 957. 2246. 4966. 10432. 26990. 66103.	0.081 1.04 2.21 4.81 10.6 24.8 50.0	. 3.50 3.48 3.48 3.49 3.50 3.51	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45613

Analyte: BENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. .99 2.475 4.95 9.9 24.75 49.5	0. 3414. 8843. 18496. 42620. 121390. 277135.	0.485 1.22 2.30 4.31 9.83 24.9 49.5	0. 4.86 4.83 4.84 4.85 4.85 4.87	.9998

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45613

Analyte: TOLUENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 1. 2.5 5. 10. 25. 50.	0. 3080. 7864. 16519. 36743. 105896. 251001.	0.438 1.22 2.34 4.46 9.88 25.2 50.0	0. 6.98 6.96 6.97 6.98 6.97 6.98	.9998

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45613

Analyte: CHLOROBENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 1.02 2.55 5.1 10.2 25.5 51.	0. 3441. 8356. 18034. 41713. 113954. 282561.	0.362 1.20 2.28 4.53 10.5 25.5 51.0	0. 9.23 9.22 9.22 9.22 9.22 9.23	.9998

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45613

Analyte: ETHYLBENZENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 1.04 2.6 5.2 10.4 26. 52.	0. 2789. 7404. 15392. 33080. 99936. 236895.	0.520 1.31 2.50 4.67 9.95 26.3 52.0	0. 9.33 9.31 9.32 9.31 9.31 9.32	.9998

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45613

Analyte: M-AND/OR-P XYLENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 2. 5. 10. 20. 50. 100.	0. 6420. 16587. 36912. 87656. 238871. 558860.	0.915 2.34 4.41 8.75 20.6 50.0 100.0	0. 9.53 9.51 9.52 9.51 9.51 9.53	.9998

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45613

Analyte: O-XYLENE

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/12/93	0. 1.1 2.75 5.5 11. 27.5 55.	0. 2869. 7364. 15648. 34698. 98637. 238528.	0.437 1.30 2.54 4.95 11.0 27.6 55.0	0. 10.24 10.23 10.23 10.23 10.22 10.23	.9999

Control Limits: r = 0.995

Comments:

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45613

Analyte: DICHLOROBENZENE, TOT.

Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/13/93	0. 2.98 7.45 14.9 29.8 74.5 149. 298.	0. 22915. 57257. 114187. 270173. 706895. 1307334. 3009311.	-.342 2.39 6.47 13.2 31.4 80.7 144. 299.	0. . . . . . . . . . .	.9996

Control Limits: r = 0.995

Comments:

Client ID

## REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G45613

Lab Sample ID: SP1\*SOIL\*2

Date Analyzed: 12/13/93

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
BENZENE	2000.	2120.		106.0	74-130
TOLUENE	2000.	2120.		106.0	74 130
CHLOROBENZENE	2000.	2150.		107.5	
ETHYLBENZENE	2000.	2180.		109.0	

Comments:

FORM V ESE

000153

Client ID

## CALIBRATION VERIFICATION

ICV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45613

Lab Sample ID: ICV\*1213\*2

Date Analyzed: 12/13/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
MTBE	20.0	21.6		8.0	
BENZENE	20.0	21.1		5.5	
TOLUENE	20.0	21.4		7.0	
CHL'BENZENE	20.0	21.7		8.5	
E'BENZENE	20.0	22.0		10.0	
M &/OR P XYL	40.0	44.5		11.3	
O XYLENE	20.0	21.7		8.5	

Comments:

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FORM VIII ESE

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## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G45121

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*QC*1	W	TRPH	00/00/00	00/00/00	12/15/93
SP1	SP1*QC*1	W	TRPH	00/00/00	00/00/00	12/15/93
SP2	SP2*QC*1	W	TRPH	00/00/00	00/00/00	12/15/93
SBEB1	NABKB1A*4	W	TRPH	11/30/93	12/03/93	12/15/93
SBEB2	NABKB1A*5	W	TRPH	12/02/93	12/03/93	12/15/93
SBFB1	NABKB1A*7	W	TRPH	12/02/93	12/03/93	12/15/93
SBEB1MS	SPM1*BKB1A*7	W	TRPH	11/30/93	12/03/93	12/15/93
ICB1	ICB*QC*1	W	TRPH	00/00/00	00/00/00	12/15/93
ICV1	ICV*QC*1	W	TRPH	00/00/00	00/00/00	12/15/93
CCB1	CCB*QC*1	W	TRPH	00/00/00	00/00/00	12/15/93
CCV1	CCV*QC*1	W	TRPH	00/00/00	00/00/00	12/15/93

Comments:

# **QC SUMMARY DATA**

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Client ID

SBEB1MS

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45121

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC #	QC LIMITS REC.
HYDROCARBONS, PETRO (TRPH)	4.51	0.	4.14	91.8	76-122

COMPOUND	SPIKE ADDED	MSD CONCENTRATION	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
					23	76-122

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENT:

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G45121

Lab Sample ID: MB\*QC\*1

Lab File ID:

Matrix: (soil/water) WATER

Instrument ID:

Date Analyzed : 12/15/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
SBEB1	NABKB1A*4	12/15/93
SBEB2	NABKB1A*5	12/15/93
SBFB1	NABKB1A*7	12/15/93
SBEB1MS	SPM1*NABKB1A*4	12/15/93

COMMENTS :

page 1 of 1

FORM IV ESE

000156

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

SBEB1

Lab Name: ESE Project No.: 7934090G SDG No.: G45121

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*4

Sample wt/vol: 900. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.19 U

page 1 of 1

FORM I ESE

000157 -

## ANALYSIS DATA SHEET

Client ID

SBEB2

Lab Name: ESE Project No.: 7934090G SDG No.: G45121

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*5

Sample wt/vol: 910. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.19 U

page 1 of 1

FORM I ESE

000158 -

## ANALYSIS DATA SHEET

Client ID

SBFB1

Lab Name: ESE Project No.: 7934090G SDG No.: G45121

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*7

Sample wt/vol: 870. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.20 U

page 1 of 1

FORM I ESE

000159-

# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G45121

Matrix: (soil/water) WATER Lab Sample ID: MB\*QC\*1

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	0.17 U

page 1 of 1

FORM I ESE

000160-

## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45121

Matrix: (soil/water) WATER Lab Sample ID: SP1\*QC\*1

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	3.72

page 1 of 1

FORM I ESE

000161-

## ANALYSIS DATA SHEET

Client ID

SP2

Lab Name: ESE Project No.: 7934090G SDG No.: G45121

Matrix: (soil/water) WATER Lab Sample ID: SP2\*QC\*1

Sample wt/vol: 1000. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	3.84

page 1 of 1

FORM I ESE

000162

## ANALYSIS DATA SHEET

Client ID

SBEB1MS

Lab Name: ESE Project No.: 7934090G SDG No.: G45121

Matrix: (soil/water) WATER Lab Sample ID: SPM1\*NABKB1A\*4

Sample wt/vol: 960. Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	4.14

page 1 of 1

FORM I ESE

000163

## ANALYSIS DATA SHEET

Client ID

ICB1

Lab Name: ESE Project No.: 7934090G SDG No.: G45121

Matrix: (soil/water) WATER Lab Sample ID: ICB\*QC\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	1.71 U

page 1 of 1

FORM I ESE

000164

## ANALYSIS DATA SHEET

Client ID

CCB1

Lab Name: ESE Project No.: 7934090G SDG No.: G45121

Matrix: (soil/water) WATER Lab Sample ID: CCB\*QC\*1

Sample wt/vol: . Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	1.71 U

page 1 of 1

FORM I ESE

000165-

## ANALYSIS DATA SHEET

Client ID

CCV1

Lab Name: ESE Project No.: 7934090G SDG No.: G45121

Matrix: (soil/water) WATER Lab Sample ID: CCV\*QC\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
61-73-4	(TRPH) (MG/L) _____	34.8

page 1 of 1

FORM I ESE

000166

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45121

Analyte: HYDROCARBONS, PETRO (TRPH)      Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/15/93	0.00000 1.706 3.412 8.531 17.06 34.12 85.31	90. 86. 84. 76. 64. 45. 18.	11000. 10500. 10200. 9260. 7800. 5480. 2190.		.9996

Control Limits: r = 0.995

Comments:

Client ID

REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G45121

Lab Sample ID: SP1\*QC\*1

Date Analyzed: 12/15/93

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
HYDROCARBONS, PETRO (TRPH)	4.24	3.72		87.7	76-122

Comments:

FORM V ESE

000168

Client ID

REFERENCE STANDARD

SP2

Lab Name: ESE

SDG No: G45121

Lab Sample ID: SP2\*QC\*1

Date Analyzed: 12/15/93

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
HYDROCARBONS, PETRO (TRPH)	4.24	3.84		90.6	76-122

Comments:

FORM V ESE

000169

Client ID

CALIBRATION BLANKS

ICB1

Lab Name: ESE

Project No.: 7934090G

SDG No: G45121

Lab Sample ID: ICB\*QC\*1

Instrument ID:

Analyte	Conc	C	CRDL
TRPH	89.0		

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FORM VII ESE

000170

Client ID

CALIBRATION BLANKS

CCB1

Lab Name: ESE

Project No.: 7934090G

SDG No: G45121

Lab Sample ID: CCB\*QC\*1

Instrument ID:

Analyte	Conc	C	CRDL
TRPH	90.0		

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FORM VII ESE

000171

Client ID

CALIBRATION VERIFICATION

ICV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45121

Lab Sample ID: ICV\*QC\*1

Date Analyzed: 12/15/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	34.1	34.8		2.1	

Comments:

page 1 of 1

FORM VIII ESE

000172

Client ID

CALIBRATION VERIFICATION

CCV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45121

Lab Sample ID: CCV\*QC\*1

Date Analyzed: 12/15/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	34.1	34.8		2.1	

Comments:

page 1 of 1

FORM VIII ESE

000173

## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G45476

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
SP1	SP1*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
AA	NABKB1A*49	W	TRPH	11/30/93	12/03/93	12/23/93
AB	NABKB1A*50	W	TRPH	11/30/93	12/03/93	12/23/93
AC	NABKB1A*51	W	TRPH	11/30/93	12/03/93	12/23/93
5052DP1	NABKB1A*52	W	TRPH	11/30/93	12/03/93	12/23/93
5052DP2	NABKB1A*53	W	TRPH	11/30/93	12/03/93	12/23/93
AD	NABKB1A*54	W	TRPH	11/30/93	12/03/93	12/23/93
AE	NABKB1A*55	W	TRPH	11/30/93	12/03/93	12/23/93
AF	NABKB1A*56	W	TRPH	11/30/93	12/03/93	12/23/93
AG	NABKB1A*10	W	TRPH	12/01/93	12/03/93	12/23/93
AH	NABKB1A*11	W	TRPH	12/01/93	12/03/93	12/23/93
AI	NABKB1A*12	W	TRPH	12/01/93	12/03/93	12/23/93
AJ	NABKB1A*13	W	TRPH	12/01/93	12/03/93	12/23/93
AK	NABKB1A*14	W	TRPH	12/01/93	12/03/93	12/23/93
AL	NABKB1A*15	W	TRPH	12/01/93	12/03/93	12/23/93
2029DP2	NABKB1A*25	W	TRPH	12/01/93	12/03/93	12/23/93
AM	NABKB1A*26	W	TRPH	12/01/93	12/03/93	12/23/93
AN	NABKB1A*27	W	TRPH	12/01/93	12/03/93	12/23/93
AO	NABKB1A*28	W	TRPH	12/01/93	12/03/93	12/23/93
AP	NABKB1A*29	W	TRPH	12/01/93	12/03/93	12/23/93
AQ	NABKB1A*62	W	TRPH	11/30/93	12/03/93	12/23/93
5052DP1MS	SPM1*BKB1A52	W	TRPH	11/30/93	12/03/93	12/23/93
5052DP1MSD	SPM2*BKB1A52	W	TRPH	11/30/93	12/03/93	12/23/93
ICB1	ICB*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
ICV1	ICV*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
CCB1	CCB*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
CCV1	CCV*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
CCB2	CCB*QC*2	W	TRPH	00/00/00	00/00/00	12/23/93
CCV2	CCV*QC*2	W	TRPH	00/00/00	00/00/00	12/23/93

Comments:

CROSS REFERENCE TABLE FOR SDG: G45476 12:48:48 19 JAN 1994

THIS SDG INCLUDES THE FOLLOWING BATCHES :  
G45476

PRINTED BY : JEFF SHAMIS

ABBREVIATION COMPLETE NAME

AA	5052SB7-10
AB	5052SB6-10
AC	5052SB3-10
AD	5052SB1-10
AE	5052SB2-10
AF	5052SB4-10
AG	2029SB2-2
AH	2029SB3-2
AI	2029SB4-2
AJ	2029SB5-2
AK	2029SB6-2
AL	2029SB7-2
AM	3022SB1-2
AN	3022SB2-2
AO	3022SB3-2
AP	3022SB4-2
AQ	5052SB5-10

000203

# **QC SUMMARY DATA**

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G45476

Lab Sample ID: MB\*QC\*1

Lab File ID:

Matrix: (soil/water) WATER

Instrument ID:

Date Analyzed : 12/23/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
AA	NABKB1A*49	12/23/93
AB	NABKB1A*50	12/23/93
AC	NABKB1A*51	12/23/93
5052DP1	NABKB1A*52	12/23/93
5052DP2	NABKB1A*53	12/23/93
AD	NABKB1A*54	12/23/93
AE	NABKB1A*55	12/23/93
AF	NABKB1A*56	12/23/93
AG	NABKB1A*10	12/23/93
AH	NABKB1A*11	12/23/93
AI	NABKB1A*12	12/23/93
AJ	NABKB1A*13	12/23/93
AK	NABKB1A*14	12/23/93
AL	NABKB1A*15	12/23/93
2029DP2	NABKB1A*25	12/23/93
AM	NABKB1A*26	12/23/93
AN	NABKB1A*27	12/23/93
AO	NABKB1A*28	12/23/93
AP	NABKB1A*29	12/23/93
AQ	NABKB1A*62	12/23/93
5052DP1MS	SPM1*NABKB1A*52	12/23/93
5052DP1MSD	SPM2*NABKB1A*52	12/23/93

COMMENTS:

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FORM IV ESE

000205

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

AG

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*10

Sample wt/vol: 15.0. Lab File ID:

%Moisture: 17.2 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	34.3 U

page 1 of 1

FORM I ESE

000215

## ANALYSIS DATA SHEET

Client ID

AH

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*11

Sample wt/vol: 14.9. Lab File ID:

%Moisture: 24.9 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
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(TRPH) (UG/G-DRY)	38.1	U
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page 1 of 1

FORM I ESE

000216

## ANALYSIS DATA SHEET

Client ID

AI

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*12

Sample wt/vol: 15.1. Lab File ID:

%Moisture: 18.8 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
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(TRPH) (UG/G-DRY)	34.8	U
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page 1 of 1

FORM I ESE

000217

## ANALYSIS DATA SHEET

Client ID

AJ

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*13

Sample wt/vol: 15.1. Lab File ID:

%Moisture: 18.7 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	1110.

page 1 of 1

FORM I ESE

000218

## ANALYSIS DATA SHEET

Client ID

AK

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*14

Sample wt/vol: 15.0. Lab File ID:

%Moisture: 14.1 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
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	(TRPH) (UG/G-DRY) _____	33.1	U
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page 1 of 1

FORM I ESE

000219

## ANALYSIS DATA SHEET

Client ID

AL

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45476

Matrix: (soil/water) WATER

Lab Sample ID: NABKB1A\*15

Sample wt/vol: 15.1.

Lab File ID:

%Moisture: 12.3

pH:

Dilution Factor: 1.00

Date Analyzed: 12/23/93

Date Received: 12/03/93

CAS NO.

COMPOUND

Q

(TRPH) (UG/G-DRY)

32.2

U

page 1 of 1

FORM I ESE

000220

## ANALYSIS DATA SHEET

Client ID

2029DP2

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*25

Sample wt/vol: 15.0. Lab File ID:

%Moisture: 17.9 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	34.6 U

page 1 of 1

FORM I ESE

000221

ANALYSIS DATA SHEET

### Client ID

AM

Lab Name: ESE Project No.: 7934090G SDG No.: G45476  
Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*26  
Sample wt/vol: 14.9. Lab File ID:  
%Moisture: 12.7 pH: Dilution Factor: 1.00  
Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO. COMPOUND Q

(TRPH) (UG/G-DRY) _____	32.8	U
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page 1 of 1

FORM T ESE

000222 -

## ANALYSIS DATA SHEET

Client ID

AN

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*27

Sample wt/vol: 15.0. Lab File ID:

%Moisture: 13.0 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

(TRPH) (UG/G-DRY)	168.	

page 1 of 1

FORM I ESE

000223 -

Client ID

## ANALYSIS DATA SHEET

AO

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45476

Matrix: (soil/water) WATER

Lab Sample ID: NABKB1A\*28

Sample wt/vol: 14.9.

Lab File ID:

%Moisture: 15.1

pH:

Dilution Factor: 1.00

Date Analyzed: 12/23/93

Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

(TRPH) (UG/G-DRY)	33.7	U

page 1 of 1

FORM I ESE

000224

Client ID

## ANALYSIS DATA SHEET

AP

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*29

Sample wt/vol: 15.1. Lab File ID:

%Moisture: 11.4 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
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(TRPH) (UG/G-DRY)	31.9	U
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page 1 of 1

FORM I ESE

000225-

# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: MB\*QC\*1

Sample wt/vol: 15.0. Lab File ID:

%Moisture: .005 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	28.4 U

page 1 of 1

FORM I ESE

000227

## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: SP1\*QC\*1

Sample wt/vol: 15.0. Lab File ID:

%Moisture: .005 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
---------	----------	---

(TRPH) (UG/G-DRY)	1100.	

page 1 of 1

FORM I ESE

000228

## ANALYSIS DATA SHEET

Client ID

ICB1

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: ICB\*QC\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	1.71 U

page 1 of 1

FORM I ESE

000231

**ANALYSIS DATA SHEET**

### Client ID

CCB1

Lab Name: ESE Project No.: 7934090G SDG No.: G45476  
Matrix: (soil/water) WATER Lab Sample ID: CCB\*QC\*1  
Sample wt/vol: . Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO. COMPOUND

(TRPH) (UG/G-DRY)	1.71	U
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page 1 of 1

FORM I ESE

000232

## ANALYSIS DATA SHEET

Client ID

CCV1

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: CCV\*QC\*1

Sample wt/vol: . Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	34.5

page 1 of 1

FORM I ESE

000233

## ANALYSIS DATA SHEET

Client ID

CCB2

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: CCB\*QC\*2

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY)	1.71 U

page 1 of 1

FORM I ESE

000234

## ANALYSIS DATA SHEET

Client ID

CCV2

Lab Name: ESE Project No.: 7934090G SDG No.: G45476

Matrix: (soil/water) WATER Lab Sample ID: CCV\*QC\*2

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
---------	----------	---

(TRPH) (UG/G-DRY)	34.5	

page 1 of 1

FORM I ESE

000235

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45476

Analyte: HYDROCARBONS, PETROL (TRPH)      Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/23/93	0.0 1.706 3.412 8.531 17.06 34.12 85.31	90. 86. 84. 77. 66. 46. 17.	10600. 10100. 9900. 9070. 7770. 5420. 2000.		.9998

Control Limits: r = 0.995

Comments:

Client ID

REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G45476

Lab Sample ID: SP1\*QC\*1

Date Analyzed: 12/23/93

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
HYDROCARBONS, PETROL (TRPH)	1140.	1100.		96.5	76-122

Comments:

FORM V ESE

000237

Client ID

CALIBRATION BLANKS

ICB1

Lab Name: ESE Project No.: 7934090G SDG No: G45476

Lab Sample ID: ICB\*QC\*1 Instrument ID:

Analyte	Conc	C	CRDL
TRPH	90.0		

Page 1 of 1

FORM VII ESE

000238

Client ID

CALIBRATION BLANKS

CCB1

Lab Name: ESE Project No.: 7934090G SDG No: G45476

Lab Sample ID: CCB\*QC\*1 Instrument ID:

Analyte	Conc	C	CRDL
TRPH	90.0		

Page 1 of 1

FORM VII ESE

000239

Client ID

CALIBRATION BLANKS

CCB2

Lab Name: ESE Project No.: 7934090G SDG No: G45476

Lab Sample ID: CCB\*QC\*2 Instrument ID:

Analyte	Conc	C	CRDL
TRPH	90.0		

Page 1 of 1

FORM VII ESE

000249

Client ID

CALIBRATION VERIFICATION

ICV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45476

Lab Sample ID: ICV\*QC\*1

Date Analyzed: 12/23/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	33.8	34.5		2.1	

Comments:

page 1 of 1

FORM VIII ESE

000241

Client ID

CALIBRATION VERIFICATION

CCV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45476

Lab Sample ID: CCV\*QC\*1

Date Analyzed: 12/23/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	34.1	34.5		1.2	

Comments:

page 1 of 1

FORM VIII ESE

000242-

Client ID

CALIBRATION VERIFICATION

CCV2

Lab Name: ESE

Project No: 7934090G

SDG No: G45476

Lab Sample ID: CCV\*QC\*2

Date Analyzed: 12/23/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	34.1	34.5		1.2	

Comments:

page 1 of 1

FORM VIII ESE

000243

## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G45477

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
SP1	SP1*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
AA	NABKB1A*30	W	TRPH	12/01/93	12/03/93	12/23/93
AB	NABKB1A*31	W	TRPH	12/01/93	12/03/93	12/23/93
AC	NABKB1A*32	W	TRPH	12/02/93	12/03/93	12/23/93
AD	NABKB1A*33	W	TRPH	12/01/93	12/03/93	12/23/93
AE	NABKB1A*34	W	TRPH	12/01/93	12/03/93	12/23/93
AF	NABKB1A*35	W	TRPH	12/01/93	12/03/93	12/23/93
3022DP1	NABKB1A*36	W	TRPH	12/01/93	12/03/93	12/23/93
AG	NABKB1A*9	W	TRPH	12/01/93	12/03/93	12/23/93
AH	NABKB1A*16	W	TRPH	12/02/93	12/03/93	12/23/93
AI	NABKB1A*17	W	TRPH	12/02/93	12/03/93	12/23/93
AJ	NABKB1A*18	W	TRPH	12/02/93	12/03/93	12/23/93
AK	NABKB1A*19	W	TRPH	12/02/93	12/03/93	12/23/93
AL	NABKB1A*20	W	TRPH	12/02/93	12/03/93	12/23/93
AM	NABKB1A*21	W	TRPH	12/02/93	12/03/93	12/23/93
AN	NABKB1A*22	W	TRPH	12/02/93	12/03/93	12/23/93
AO	NABKB1A*23	W	TRPH	12/02/93	12/03/93	12/23/93
2029DP1	NABKB1A*24	W	TRPH	12/02/93	12/03/93	12/23/93
AP	NABKB1A*46	W	TRPH	12/01/93	12/03/93	12/23/93
AQ	NABKB1A*60	W	TRPH	12/01/93	12/03/93	12/23/93
AR	NABKB1A*61	W	TRPH	12/01/93	12/03/93	12/23/93
2029DP1MS	SPM1*BKB1A24	W	TRPH	12/02/93	12/03/93	12/23/93
2029DP1MSD	SPM2*BKB1A24	W	TRPH	12/02/93	12/03/93	12/23/93
ICB1	ICB*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
ICV1	ICV*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
CCB1	CCB*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
CCV1	CCV*QC*1	W	TRPH	00/00/00	00/00/00	12/23/93
CCB2	CCB*QC*2	W	TRPH	00/00/00	00/00/00	12/23/93
CCV2	CCV*QC*2	W	TRPH	00/00/00	00/00/00	12/23/93

Comments:

CROSS REFERENCE TABLE FOR SDG: G45477 12:43:31 19 JAN 1994

THIS SDG INCLUDES THE FOLLOWING BATCHES :  
G45477

PRINTED BY : JEFF SHAMIS

ABBREVIATION COMPLETE NAME

AA	3022SB5-2
AB	3022SB6-2
AC	2029SB8-4
AD	3022SB4-5
AE	3022SB3-5
AF	3022SB2-5
AG	2029SB1-2
AH	2029SB8-2
AI	2029SB9-2
AJ	2029SB10-2
AK	2029SB11-2
AL	2029DUP2-2
AM	2029SB13-2
AN	2029SB14-2
AO	2029SB14-4
AP	2029SB7-4
AQ	2029SB1-5
AR	3022SB1-6

000245

# **QC SUMMARY DATA**

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Client ID

2029DP1MS

Lab Name: ESE

Project No.: 7934090G

SDG No.: G45477

COMPOUND	SPIKE ADDED	SAMPLE CONCENTRATION	MS CONCENTRATION	MS % REC #	QC LIMITS REC.
HYDROCARBONS, PETROL	1310	46.5	1250	95.4	76-122

COMPOUND	SPIKE ADDED	MSD CONCENTRATION	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
HYDROCARBONS, PETROL	1310	1250	95.4	0.0	23	76-122

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

COMMENT:

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G45477

Lab Sample ID: MB\*QC\*1

Lab File ID:

Matrix: (soil/water) WATER

Instrument ID:

Date Analyzed : 12/23/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
AA	NABKB1A*30	12/23/93
AB	NABKB1A*31	12/23/93
AC	NABKB1A*32	12/23/93
AD	NABKB1A*33	12/23/93
AE	NABKB1A*34	12/23/93
AF	NABKB1A*35	12/23/93
3022DP1	NABKB1A*36	12/23/93
AG	NABKB1A*9	12/23/93
AH	NABKB1A*16	12/23/93
AI	NABKB1A*17	12/23/93
AJ	NABKB1A*18	12/23/93
AK	NABKB1A*19	12/23/93
AL	NABKB1A*20	12/23/93
AM	NABKB1A*21	12/23/93
AN	NABKB1A*22	12/23/93
AO	NABKB1A*23	12/23/93
2029DP1	NABKB1A*24	12/23/93
AP	NABKB1A*46	12/23/93
AQ	NABKB1A*60	12/23/93
AR	NABKB1A*61	12/23/93
2029DP1MS	SPM1*NABKB1A*24	12/23/93
2029DP1MSD	SPM2*NABKB1A*24	12/23/93

COMMENTS :

page 1 of 1

FORM IV ESE

000247

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

AC

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*32

Sample wt/vol: 14.9. Lab File ID:

%Moisture: 18.3 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	35.0 U

page 1 of 1

FORM I ESE

000250

**ANALYSIS DATA SHEET**

**Client ID**

AG

Lab Name: ESE Project No.: 7934090G SDG No.: G45477  
Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*9  
Sample wt/vol: 15.0. Lab File ID:  
%Moisture: 13.2 pH: Dilution Factor: 1.00  
Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO. COMPOUND

(TRPH) (UG/G-DRY)	32.8	U
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page 1 of 1

**FORM I ESE**

000256-

## ANALYSIS DATA SHEET

Client ID

AH

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*16

Sample wt/vol: 15.1. Lab File ID:

%Moisture: 17.0 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
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CAS NO.	COMPOUND	Q
(TRPH) (UG/G-DRY)	34.0	U

page 1 of 1

FORM I ESE

000257

## ANALYSIS DATA SHEET

Client ID

AI

Lab Name: ESE Project No.: 7934090G SDG No.: G45477  
Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*17  
Sample wt/vol: 15.0. Lab File ID:  
%Moisture: 11.5 pH: Dilution Factor: 1.00  
Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	32.1 U

page 1 of 1

FORM I ESE

000258

## ANALYSIS DATA SHEET

Client ID

AJ

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*18

Sample wt/vol: 15.1. Lab File ID:

%Moisture: 16.8 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY)	60.5

page 1 of 1

FORM I ESE

000259

## ANALYSIS DATA SHEET

Client ID

AK

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*19

Sample wt/vol: 15.0. Lab File ID:

%Moisture: 19.9 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

(TRPH) (UG/G-DRY)	50.8	

page 1 of 1

FORM I ESE

090260

## ANALYSIS DATA SHEET

Client ID

AL

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*20

Sample wt/vol: 15.1. Lab File ID:

%Moisture: 12.2 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

(TRPH) (UG/G-DRY)	32.2	U
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page 1 of 1

FORM I ESE

000261

**ANALYSIS DATA SHEET**

### Client ID

AM

Lab Name: ESE Project No.: 7934090G SDG No.: G45477  
Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*21  
Sample wt/vol: 15.0. Lab File ID:  
%Moisture: 14.0 pH: Dilution Factor: 1.00  
Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO. COMPOUND

(TRPH) (UG/G-DRY) _____	33.1 U
-------------------------	--------

page 1 of 1

**FORM I ESE**

000262

## ANALYSIS DATA SHEET

### Client ID

AN

Lab Name: ESE Project No.: 7934090G SDG No.: G45477  
Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*22  
Sample wt/vol: 14.9. Lab File ID:  
%Moisture: 14.5 pH: Dilution Factor: 1.00  
Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO. COMPOUND

(TRPH) (UG/G-DRY) \_\_\_\_\_

page 1 of 1

**FORM I ESE**

000263

**ANALYSIS DATA SHEET**

### Client ID

AQ

Lab Name: ESE Project No.: 7934090G SDG No.: G45477  
Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*23  
Sample wt/vol: 15.0. Lab File ID:  
%Moisture: 17.6 pH: Dilution Factor: 1.00  
Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.                    COMPOUND

(TRPH) (UG/G-DRY) \_\_\_\_\_

page 1 of 1

**FORM I ESE**

080264

## ANALYSIS DATA SHEET

Client ID

2029DP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*24

Sample wt/vol: 15.1. Lab File ID:

%Moisture: 13.2 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	46.5

page 1 of 1

FORM I ESE

000265

## ANALYSIS DATA SHEET

Client ID

AP

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*46

Sample wt/vol: 15.0. Lab File ID:

%Moisture: 15.1 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO. COMPO ( ) Q

(TRPH) (UG/G-DRY)	33.5	U

page 1 of 1

FORM 1 ESE

000266

**ANALYSIS DATA SHEET**

### Client ID

AQ

Lab Name: ESE Project No.: 7934090G SDG No.: G45477  
Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*60  
Sample wt/vol: 15.1 Lab File ID:  
%Moisture: 18.1 pH: Dilution Factor: 1.00  
Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO. COMPOUND

(TRPH) (UG/G-DRY)	34.5	U
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page 1 of 1

**FORM I ESE**

000267-

# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: MB\*QC\*1

Sample wt/vol: 15.0. Lab File ID:

%Moisture: .005 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
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(TRPH) (UG/G-DRY)	28.4	U
-------------------	------	---

page 1 of 1

FORM I ESE

000269

## ANALYSIS DATA SHEET

Client ID

SP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: SP1\*QC\*1

Sample wt/vol: 15.0. Lab File ID:

%Moisture: .005 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
---------	----------	---

(TRPH) (UG/G-DRY)	1100.	

page 1 of 1

FORM I ESE

000270

**ANALYSIS DATA SHEET**

### Client ID

2029DP1MS

Lab Name : ESE Project No. : 7934090G SDG No. : G45477

Matrix: (soil/water) WATER Lab Sample ID: SPM1\*NABKB1A\*24

Sample wt/vol: 15.0. Lab File ID:

%Moisture: 13.2 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO. COMPOUND

(TRPH) (UG/G-DRY) \_\_\_\_\_ 1300.

page 1 of 1

FORM I ESE

000271

## ANALYSIS DATA SHEET

Client ID

2029DP1MSD

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: SPM2\*NABKB1A\*24

Sample wt/vol: 15.0. Lab File ID:

%Moisture: 13.2 pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	1300.

page 1 of 1

FORM I ESE

000272

## ANALYSIS DATA SHEET

Client ID

ICB1

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: ICB\*QC\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY)	1.71 U

page 1 of 1

FORM I ESE

000273

## ANALYSIS DATA SHEET

Client ID

CCB1

Lab Name: ESE Project No.: 7034090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: CCB\*QC\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY)	1.71 U

page 1 of 1

FORM I ESE

000274

## ANALYSIS DATA SHEET

Client ID

CCV1

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: CCV\*QC\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
---------	----------	---

CAS NO.	COMPOUND	Q	
	(TRPH) (UG/G-DRY) _____	34.5	

page 1 of 1

FORM I ESE

000275

## ANALYSIS DATA SHEET

Client ID

CCB2

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: CCB\*QC\*2

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY)	1.71 U

page 1 of 1

FORM I ESE

000276-

## ANALYSIS DATA SHEET

Client ID

CCV2

Lab Name: ESE Project No.: 7934090G SDG No.: G45477

Matrix: (soil/water) WATER Lab Sample ID: CCV\*QC\*2

Sample wt/vol: . Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/23/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	(TRPH) (UG/G-DRY) _____	34.5

page 1 of 1

FORM I ESE

000277

## CALIBRATION CURVES

Lab Name: ESE

SDG #: G45477

Analyte: HYDROCARBONS, PETROL (TRPH)      Instrument ID:

Curve #	Analysis Date	Concentration	Response	Predicted Concentration	Retention Time (min)	Correlation Coeff. (r)
1	12/23/93	0.0 1.706 3.412 8.531 17.06 34.12 85.31	90. 86. 84. 77. 66. 46. 17.	10600. 10100. 9900. 9070. 7770. 5420. 2000.		.9998

Control Limits: r = 0.995

Comments:

Client ID

REFERENCE STANDARD

SP1

Lab Name: ESE

SDG No: G45477

Lab Sample ID: SP1\*QC\*1

Date Analyzed: 12/23/93

Standard Source:

Instrument ID:

Analyte	True	Found	C	%Recv	Limits
HYDROCARBONS, PETROL (TRPH)	1140.	1100.		96.5	76-122

Comments:

FORM V ESE

009279-

Client ID

CALIBRATION BLANKS

ICB1

Lab Name: ESE Project No.: 7934090G SDG No: G45477

Lab Sample ID: ICB\*QC\*1 Instrument ID:

Analyte	Conc	C	CRDL
TRPH	90.0		

Page 1 of 1

FORM VII ESE

000250 -

Client ID

CALIBRATION BLANKS

CCB1

Lab Name: ESE Project No.: 7934090G SDG No: G45477

Lab Sample ID: CCB\*QC\*1 Instrument ID:

Analyte	Conc	C	CRDL
TRPH	90.0		

Page 1 of 1

FORM VII ESE

000281-

Client ID

CALIBRATION BLANKS

CCB2

Lab Name: ESE

Project No.: 7934090G

SDG No: G45477

Lab Sample ID: CCB\*QC\*2

Instrument ID:

Analyte	Conc	C	CRDL
TRPH	90.0		

Client ID

CALIBRATION VERIFICATION

ICV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45477

Lab Sample ID: ICV\*QC\*1

Date Analyzed: 12/23/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	33.8	34.5		2.1	

Comments:

page 1 of 1

FORM VIII ESE

000283

Client ID

CALIBRATION VERIFICATION

CCV1

Lab Name: ESE

Project No: 7934090G

SDG No: G45477

Lab Sample ID: CCV\*QC\*1

Date Analyzed: 12/23/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	34.1	34.5		1.2	

Comments:

page 1 of 1

FORM VIII ESE

090284

Client ID

CALIBRATION VERIFICATION

CCV2

Lab Name: ESE

Project No: 7934090G

SDG No: G45477

Lab Sample ID: CCV\*QC\*2

Date Analyzed: 12/23/93

Instrument ID:

Analyte	True	Found	C	%Diff	Limit
TRPH	34.1	34.5		1.2	

Comments:

page 1 of 1

FORM VIII ESE

0002S5-

## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G44808

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*QC*1	W	MOISTURE	00/00/00	00/00/00	12/08/93
AA	NABKB1A*9	W	MOISTURE	12/01/93	12/03/93	12/08/93
RP1	RP*NABKB1A*9	W	MOISTURE	12/01/93	12/03/93	12/08/93
AB	NABKB1A*10	W	MOISTURE	12/01/93	12/03/93	12/08/93
AC	NABKB1A*11	W	MOISTURE	12/01/93	12/03/93	12/08/93
AD	NABKB1A*12	W	MOISTURE	12/01/93	12/03/93	12/08/93
AE	NABKB1A*13	W	MOISTURE	12/01/93	12/03/93	12/08/93
AF	NABKB1A*14	W	MOISTURE	12/01/93	12/03/93	12/08/93
AG	NABKB1A*15	W	MOISTURE	12/01/93	12/03/93	12/08/93
AH	NABKB1A*16	W	MOISTURE	12/02/93	12/03/93	12/08/93
AI	NABKB1A*17	W	MOISTURE	12/02/93	12/03/93	12/08/93
AJ	NABKB1A*18	W	MOISTURE	12/02/93	12/03/93	12/08/93
RP2	RP*BKB1A*18	W	MOISTURE	12/02/93	12/03/93	12/08/93
AK	NABKB1A*19	W	MOISTURE	12/02/93	12/03/93	12/08/93
AL	NABKB1A*20	W	MOISTURE	12/02/93	12/03/93	12/08/93
AM	NABKB1A*21	W	MOISTURE	12/02/93	12/03/93	12/08/93
AN	NABKB1A*22	W	MOISTURE	12/02/93	12/03/93	12/08/93
AO	NABKB1A*23	W	MOISTURE	12/02/93	12/03/93	12/08/93
PBLK2	MB*QC*2	W	MOISTURE	00/00/00	00/00/00	12/08/93
2029DP2	NABKB1A*25	W	MOISTURE	12/01/93	12/03/93	12/08/93
RP3	RP*BKB1A*25	W	MOISTURE	12/01/93	12/03/93	12/08/93
AP	NABKB1A*27	W	MOISTURE	12/01/93	12/03/93	12/08/93
AQ	NABKB1A*28	W	MOISTURE	12/01/93	12/03/93	12/08/93
AR	NABKB1A*29	W	MOISTURE	12/01/93	12/03/93	12/08/93
AS	NABKB1A*30	W	MOISTURE	12/01/93	12/03/93	12/08/93
AT	NABKB1A*31	W	MOISTURE	12/01/93	12/03/93	12/08/93
AU	NABKB1A*32	W	MOISTURE	12/02/93	12/03/93	12/08/93
AV	NABKB1A*33	W	MOISTURE	12/01/93	12/03/93	12/08/93
AW	NABKB1A*34	W	MOISTURE	12/01/93	12/03/93	12/08/93
AX	NABKB1A*35	W	MOISTURE	12/01/93	12/03/93	12/08/93
AY	NABKB1A*37	W	MOISTURE	11/30/93	12/03/93	12/08/93
AZ	NABKB1A*38	W	MOISTURE	11/30/93	12/03/93	12/08/93
BA	NABKB1A*39	W	MOISTURE	11/30/93	12/03/93	12/08/93
BB	NABKB1A*40	W	MOISTURE	11/30/93	12/03/93	12/08/93

Comments:

## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G44808

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
BC	NABKB1A*41	W	MOISTURE	11/30/93	12/03/93	12/08/93
PBLK3	MB*QC*3	W	MOISTURE	00/00/00	00/00/00	12/08/93
BD	NABKB1A*42	W	MOISTURE	11/30/93	12/03/93	12/08/93
BE	NABKB1A*43	W	MOISTURE	11/30/93	12/03/93	12/08/93
RP4	RP*BKB1A*43	W	MOISTURE	11/30/93	12/03/93	12/08/93
BF	NABKB1A*44	W	MOISTURE	11/30/93	12/03/93	12/08/93
BG	NABKB1A*45	W	MOISTURE	11/30/93	12/03/93	12/08/93
BH	NABKB1A*46	W	MOISTURE	12/01/93	12/03/93	12/08/93
BI	NABKB1A*48	W	MOISTURE	11/30/93	12/03/93	12/08/93
BJ	NABKB1A*49	W	MOISTURE	11/30/93	12/03/93	12/08/93
BK	NABKB1A*50	W	MOISTURE	11/30/93	12/03/93	12/08/93
BL	NABKB1A*51	W	MOISTURE	11/30/93	12/03/93	12/08/93
5052DP2	NABKB1A*53	W	MOISTURE	11/30/93	12/03/93	12/08/93
RP5	RP*BKB1A*53	W	MOISTURE	11/30/93	12/03/93	12/08/93
BM	NABKB1A*54	W	MOISTURE	11/30/93	12/03/93	12/08/93
BN	NABKB1A*55	W	MOISTURE	11/30/93	12/03/93	12/08/93
BO	NABKB1A*56	W	MOISTURE	11/30/93	12/03/93	12/08/93

Comments:

CROSS REFERENCE TABLE FOR SDG: G44808 12:37:54 19 JAN 1994

THIS SDG INCLUDES THE FOLLOWING BATCHES :  
G44808

PRINTED BY : JEFF SHAMIS

ABBREVIATION COMPLETE NAME

AA	2029SB1-2
AB	2029SB2-2
AC	2029SB3-2
AD	2029SB4-2
AE	2029SB5-2
AF	2029SB6-2
AG	2029SB7-2
AH	2029SB8-2
AI	2029SB9-2
AJ	2029SB10-2
AK	2029SB11-2
AL	2029DUP2-2
AM	2029SB13-2
AN	2029SB14-2
AO	2029SB14-4
AP	3022SB2-2
AQ	3022SB3-2
AR	3022SB4-2
AS	3022SB5-2
AT	3022SB6-2
AU	2029SB8-4
AV	3022SB4-5
AW	3022SB3-5
AX	3022SB2-5
AY	5052SB1-5
AZ	5052SB2-5
BA	5052SB3-5
BB	5052SB4-5
BC	5052SB5-5
BD	5052SB6-5
BE	5052SB7-5
BF	5052SB8-5
BG	5052SB9-5
BH	2029SB7-4
BI	5052SB8-10
BJ	5052SB7-10
BK	5052SB6-10
BL	5052SB3-10
BM	5052SB1-10
BN	5052SB2-10
BO	5052SB4-10

0002SS

## **QC SUMMARY DATA**

ESE BATCH : G44808  
CLASSIFICATION : PERCENT MOISTURE - ASTM D2216

Sample Analysis Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	REP #1	REP #2	RPD	RPD CRIT
12/08/93	RP*NABKB1A*9	70320*ASTM-G	MOISTURE	%WET W	13.2	12.8	3.1	23
12/08/93	RP*NABKB1A*18	70320*ASTM-G	MOISTURE	%WET W	16.8	18.0	6.9	23
12/08/93	RP*NABKB1A*25	70320*ASTM-G	MOISTURE	%WET W	17.9	16.9	5.7	23
12/08/93	RP*NABKB1A*43	70320*ASTM-G	MOISTURE	%WET W	10.4	11.0	5.6	23
12/08/93	RP*NABKB1A*53	70320*ASTM-G	MOISTURE	%WET W	18.9	19.2	1.6	23

0092S9 -

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G44808

Lab Sample ID: MB\*QC\*1

Lab File ID:

Matrix: (soil/water) WATER

Instrument ID:

Date Analyzed : 12/08/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES AND RP:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
AA	NABKB1A*9	12/08/93
AB	NABKB1A*10	12/08/93
AC	NABKB1A*11	12/08/93
AD	NABKB1A*12	12/08/93
AE	NABKB1A*13	12/08/93
AF	NABKB1A*14	12/08/93
AG	NABKB1A*15	12/08/93
AH	NABKB1A*16	12/08/93
AI	NABKB1A*17	12/08/93
AJ	NABKB1A*18	12/08/93
AK	NABKB1A*19	12/08/93
AL	NABKB1A*20	12/08/93
AM	NABKB1A*21	12/08/93
AN	NABKB1A*22	12/08/93
AO	NABKB1A*23	12/08/93
2029DP2	NABKB1A*25	12/08/93
AP	NABKB1A*27	12/08/93
AQ	NABKB1A*28	12/08/93
AR	NABKB1A*29	12/08/93
AS	NABKB1A*30	12/08/93
AT	NABKB1A*31	12/08/93
AU	NABKB1A*32	12/08/93
AV	NABKB1A*33	12/08/93
AW	NABKB1A*34	12/08/93
AX	NABKB1A*35	12/08/93
AY	NABKB1A*37	12/08/93

COMMENTS :

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FORM IV ESE

000290

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G44808

Lab Sample ID: MB\*QC\*1

Lab File ID:

Matrix: (soil/water) WATER

Instrument ID:

Date Analyzed : 12/08/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES AND RP:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
AZ	NABKB1A*38	12/08/93
BA	NABKB1A*39	12/08/93
BB	NABKB1A*40	12/08/93
BC	NABKB1A*41	12/08/93
BD	NABKB1A*42	12/08/93
BE	NABKB1A*43	12/08/93
BF	NABKB1A*44	12/08/93
BG	NABKB1A*45	12/08/93
BH	NABKB1A*46	12/08/93
BI	NABKB1A*48	12/08/93
BJ	NABKB1A*49	12/08/93
BK	NABKB1A*50	12/08/93
BL	NABKB1A*51	12/08/93
5052DP2	NABKB1A*53	12/08/93
BM	NABKB1A*54	12/08/93
BN	NABKB1A*55	12/08/93
BO	NABKB1A*56	12/08/93

COMMENTS :

page 2 of 2

FORM IV ESE

000291

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

AA

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*9

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	13.2

page 1 of 1

FORM I ESE

000292-

## ANALYSIS DATA SHEET

Client ID

AB

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*10

Sample wt/vol: . Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	17.2

page 1 of 1

FORM I ESE

000293

## ANALYSIS DATA SHEET

Client ID

AC

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*11

Sample wt/vol: . Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	24.9

page 1 of 1

FORM I ESE

000294

## ANALYSIS DATA SHEET

Client ID

AD

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*12

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

PAN WEIGHT (GM)	1.55030
PAN+SAMPLE WEIGHT (WET) (GM)	16.01330
PAN+SAMPLE WEIGHT (DRY) (GM)	13.28960
MOISTURE (%WET WT)	18.8

page 1 of 1

FORM I ESE

000295-

## ANALYSIS DATA SHEET

Client ID

AE

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*13

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

MOISTURE (%WET WT)	18.7	
--------------------	------	--

## ANALYSIS DATA SHEET

Client ID

AF

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*14

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

MOISTURE (%WET WT)	14.1	
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page 1 of 1

FORM I ESE

000297-

## ANALYSIS DATA SHEET

Client ID

AG

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*15

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	12.3

page 1 of 1

FORM I ESE

000298

## ANALYSIS DATA SHEET

Client ID

AH

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*16

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO. COMPOUND Q

	MOISTURE (%WET WT) _____	17.0	

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FORM I ESE

000299

## ANALYSIS DATA SHEET

Client ID

AI

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*17

Sample wt/vol: . Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	11.5

page 1 of 1

FORM I ESE

099300

## ANALYSIS DATA SHEET

Client ID

AJ

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*18

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	16.8

page 1 of 1

FORM I ESE

088301

## ANALYSIS DATA SHEET

Client ID

AK

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*19

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

MOISTURE (%WET WT)	19.9	

page 1 of 1

FORM I ESE

099302

## ANALYSIS DATA SHEET

Client ID

AL

Lab Name: ESE Project No.: 7934090G SDG No.: G44808  
Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*20  
Sample wt/vol: . Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	12.2

page 1 of 1

FORM I ESE

000303

## ANALYSIS DATA SHEET

Client ID

AM

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*21

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	14.0

page 1 of 1

FORM I ESE

000304

## ANALYSIS DATA SHEET

Client ID

AN

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*22

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	14.5

page 1 of 1

FORM I ESE

099305

## ANALYSIS DATA SHEET

Client ID

AO

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*23

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
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MOISTURE (%WET WT)	17.6	
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page 1 of 1

FORM I ESE

000308-

## ANALYSIS DATA SHEET

Client ID

2029DP2

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*25

Sample wt/vol: . Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

MOISTURE (%WET WT)	17.9	
--------------------	------	--

page 1 of 1

FORM I ESE

000307

## ANALYSIS DATA SHEET

Client ID

BH

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*46

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
---------	----------	---

MOISTURE (%WET WT) _____	15.1	
--------------------------	------	--

page 1 of 1

FORM I ESE

090325

# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: MB\*QC\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	0.5 U

page 1 of 1

FORM I ESE

000334 -

## ANALYSIS DATA SHEET

Client ID

PBLK2

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: MB\*QC\*2

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	0.5 U

page 1 of 1

FORM I ESE

039235

## ANALYSIS DATA SHEET

Client ID

PBLK3

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: MB\*QC\*3

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 00/00/00

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	0.5 U

page 1 of 1

FORM I ESE

090336 -

## ANALYSIS DATA SHEET

Client ID

RP1

Lab Name: ESE Project No.: 7934090G SDG No.: G44808

Matrix: (soil/water) WATER Lab Sample ID: RP\*NABKB1A\*9

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	12.8

page 1 of 1

FORM I ESE

000337

## ANALYSIS DATA SHEET

Client ID

RP2

Lab Name: ESE Project No.: 7934090G SDG No.: G44808  
Matrix: (soil/water) WATER Lab Sample ID: RP\*NABKB1A\*18  
Sample wt/vol: . Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	18.0

page 1 of 1

FORM I ESE

000338

## ANALYSIS DATA SHEET

Client ID

RP3

Lab Name: ESE Project No.: 7934090G SDG No.: G44808  
Matrix: (soil/water) WATER Lab Sample ID: RP\*NABKB1A\*25  
Sample wt/vol: Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	Moisture (%WET WT) _____	16.9

page 1 of 1

FORM I ESE

090333

## ANALYSIS DATA SHEET

Client ID

RP4

Lab Name: ESE Project No.: 7934090G SDG No.: G44808  
Matrix: (soil/water) WATER Lab Sample ID: RP\*NABKB1A\*43  
Sample wt/vol: . Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	11.0

page 1 of 1

FORM I ESE

090340

## ANALYSIS DATA SHEET

Client ID

RP5

Lab Name: ESE Project No.: 7934090G SDG No.: G44808  
Matrix: (soil/water) WATER Lab Sample ID: RP\*NABKB1A\*53  
Sample wt/vol: Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 12/08/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	19.2

page 1 of 1

FORM I ESE

089241

## COVER PAGE

Lab Name: ESE

Project No.: 7934090G

SDG No: G45055

Client ID	Laboratory ID	Matrix (S/W)	Analysis	Date Collected	Date Received	Date Analyzed
PBLK1	MB*QC*1	W	MOISTURE	00/00/00	00/00/00	12/15/93
2029DP1	NABKB1A*24	W	MOISTURE	12/02/93	12/03/93	12/15/93
RP1	RP*BKB1A*24	W	MOISTURE	12/02/93	12/03/93	12/15/93
AA	NABKB1A*26	W	MOISTURE	12/01/93	12/03/93	12/15/93
3022DP1	NABKB1A*36	W	MOISTURE	12/01/93	12/03/93	12/15/93
RP2	RP*BKB1A*36	W	MOISTURE	12/01/93	12/03/93	12/15/93
5052DP1	NABKB1A*52	W	MOISTURE	11/30/93	12/03/93	12/15/93
RP3	RP*BKB1A*52	W	MOISTURE	11/30/93	12/03/93	12/15/93
AB	NABKB1A*60	W	MOISTURE	12/01/93	12/03/93	12/15/93
AC	NABKB1A*61	W	MOISTURE	12/01/93	12/03/93	12/15/93
AD	NABKB1A*62	W	MOISTURE	11/30/93	12/03/93	12/15/93

Comments:

CROSS REFERENCE TABLE FOR SDG: G45055 12:52:18 19 JAN 1994

THIS SDG INCLUDES THE FOLLOWING BATCHES :  
G45055

PRINTED BY : JEFF SHAMIS

ABBREVIATION COMPLETE NAME

AA	3022SB1-2
AB	2029SB1-5
AC	3022SB1-6
AD	5052SB5-10

000343

# **QC SUMMARY DATA**

ESE BATCH : G45055  
CLASSIFICATION : PERCENT MOISTURE - ASTM D2216

Liccate Analysis Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	REP #1	REP #2	RPD	RPD CRIT
12/15/93	RP*NABKB1A*24	70320*ASTM-G	MOISTURE	%WET W	13.2	14.5	9.4	23
12/15/93	RP*NABKB1A*36	70320*ASTM-G	MOISTURE	%WET W	21.7	22.8	4.9	23
12/15/93	RP*NABKB1A*52	70320*ASTM-G	MOISTURE	%WET W	9.4	9.3	1.1	23

000344

## ESE METHOD BLANK SUMMARY

Client ID

PBLK1

Lab Name: ESE

Project No: 7934090G

SDG No.: G45055

Lab Sample ID: MB\*QC\*1

Lab File ID:

Matrix: (soil/water) WATER

Instrument ID:

Date Analyzed : 12/15/93

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES AND RP:

CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
2029DP1	NABKB1A*24	12/15/93
AA	NABKB1A*26	12/15/93
3022DP1	NABKB1A*36	12/15/93
5052DP1	NABKB1A*52	12/15/93
AB	NABKB1A*60	12/15/93
AC	NABKB1A*61	12/15/93
AD	NABKB1A*62	12/15/93

COMMENTS:

page 1 of 1

FORM IV ESE

000245

## ANALYSIS DATA SHEET

Client ID

2029DP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45055

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*24

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	13.2

page 1 of 1

FORM I ESE

000346

# **SAMPLE DATA**

## ANALYSIS DATA SHEET

Client ID

AB

Lab Name: ESE Project No.: 7934090G SDG No.: G45055

Matrix: (soil/water) WATER Lab Sample ID: NABKB1A\*60

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	18.1

page 1 of 1

FORM I ESE

098350

# **RAW QC DATA**

## ANALYSIS DATA SHEET

Client ID

PBLK1

Lab Name: ESE Project No.: 7934090G SDG No.: G45055

Matrix: (soil/water) WATER Lab Sample ID: MB\*QC\*1

Sample wt/vol: Lab File ID:

%Moisture: pH: Dilution Factor: 1.00

Date Analyzed: 12/15/93 Date Received: 00/00/00

CAS NO.

COMPOUND

Q

MOISTURE (%WET WT) _____	0.5	U
--------------------------	-----	---

page 1 of 1

FORM I ESE

000353 -

## ANALYSIS DATA SHEET

Client ID

RP1

Lab Name: ESE Project No.: 7934090G SDG No.: G45055  
Matrix: (soil/water) WATER Lab Sample ID: RP\*NABKB1A\*24  
Sample wt/vol: Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 12/15/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	14.5

page 1 of 1

FORM I ESE

099354

## ANALYSIS DATA SHEET

Client ID

RP2

Lab Name: ESE Project No.: 7934090G SDG No.: G45055  
Matrix: (soil/water) WATER Lab Sample ID: RP\*NABKB1A\*36  
Sample wt/vol: Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 12/15/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	22.8

page 1 of 1

FORM I ESE

000355

## ANALYSIS DATA SHEET

Client ID

RP3

Lab Name: ESE Project No.: 7934090G SDG No.: G45055  
Matrix: (soil/water) WATER Lab Sample ID: RP\*NABKB1A\*52  
Sample wt/vol: Lab File ID:  
%Moisture: pH: Dilution Factor: 1.00  
Date Analyzed: 12/15/93 Date Received: 12/03/93

CAS NO.	COMPOUND	Q
	MOISTURE (%WET WT) _____	9.3

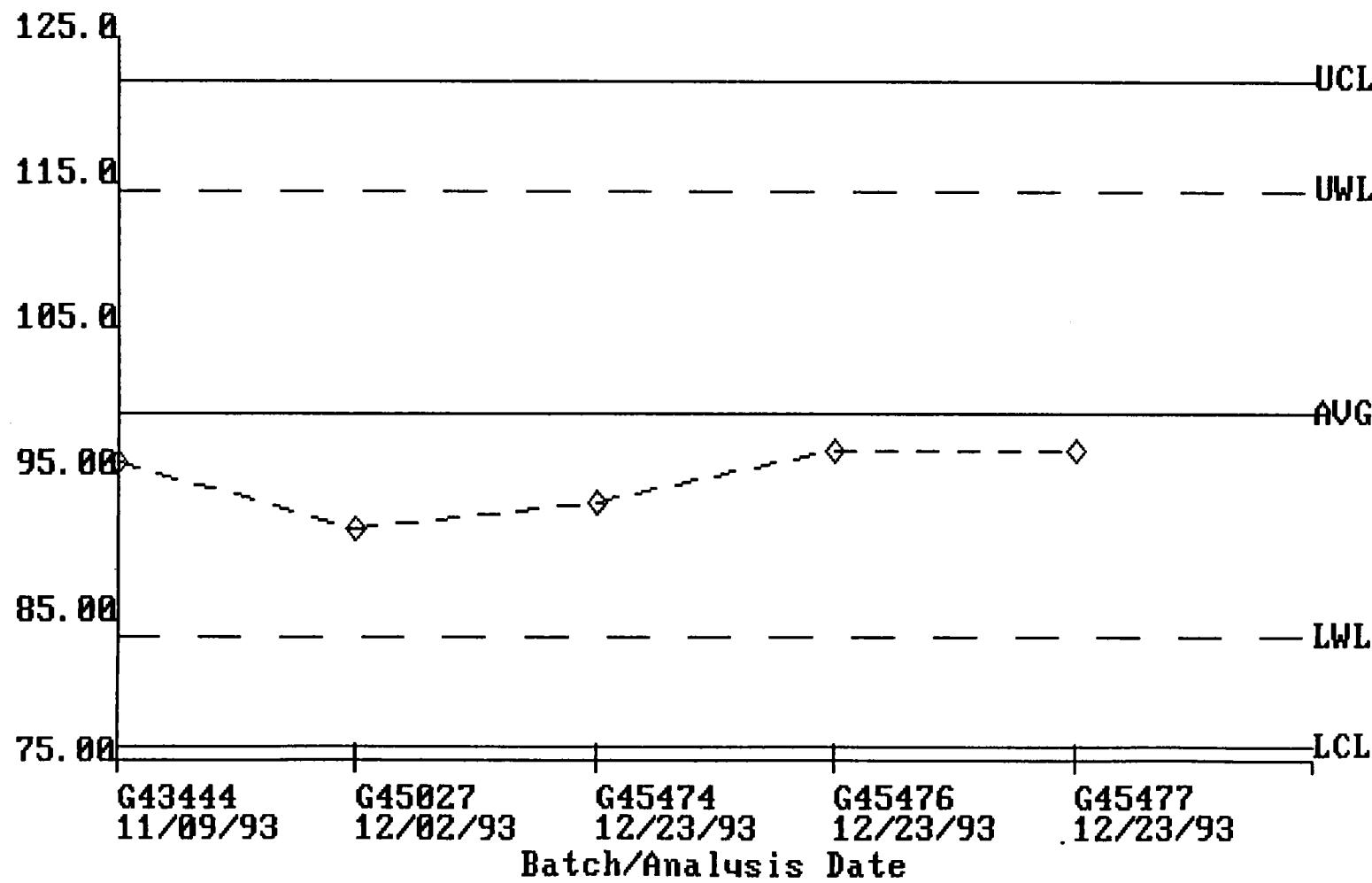
page 1 of 1

FORM I ESE

000255

# **CONTROL CHARTS**

Standard Matrix Spike [SP] TRPH, UG/G-DRY 98233\*9071/9073-G



Standard Matrix Spikes (SP) HYDROCARBONS, PETROL (TRPH), UG/G-DRY 98233\*9071/9073-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G43444	G43444*SP1*NONE*1	11/09/93	1140	95.60	
G45027	G45027*SP1*NONE*1	12/02/93	1140	91.20	
G45474	G45474*SP1*QC*1	12/23/93	1140	93.00	
G45476	G45476*SP1*QC*1	12/23/93	1140	96.50	
G45477	G45477*SP1*QC*1	12/23/93	1140	96.50	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
122.001	75.999	114.334	83.666	99	7.667

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

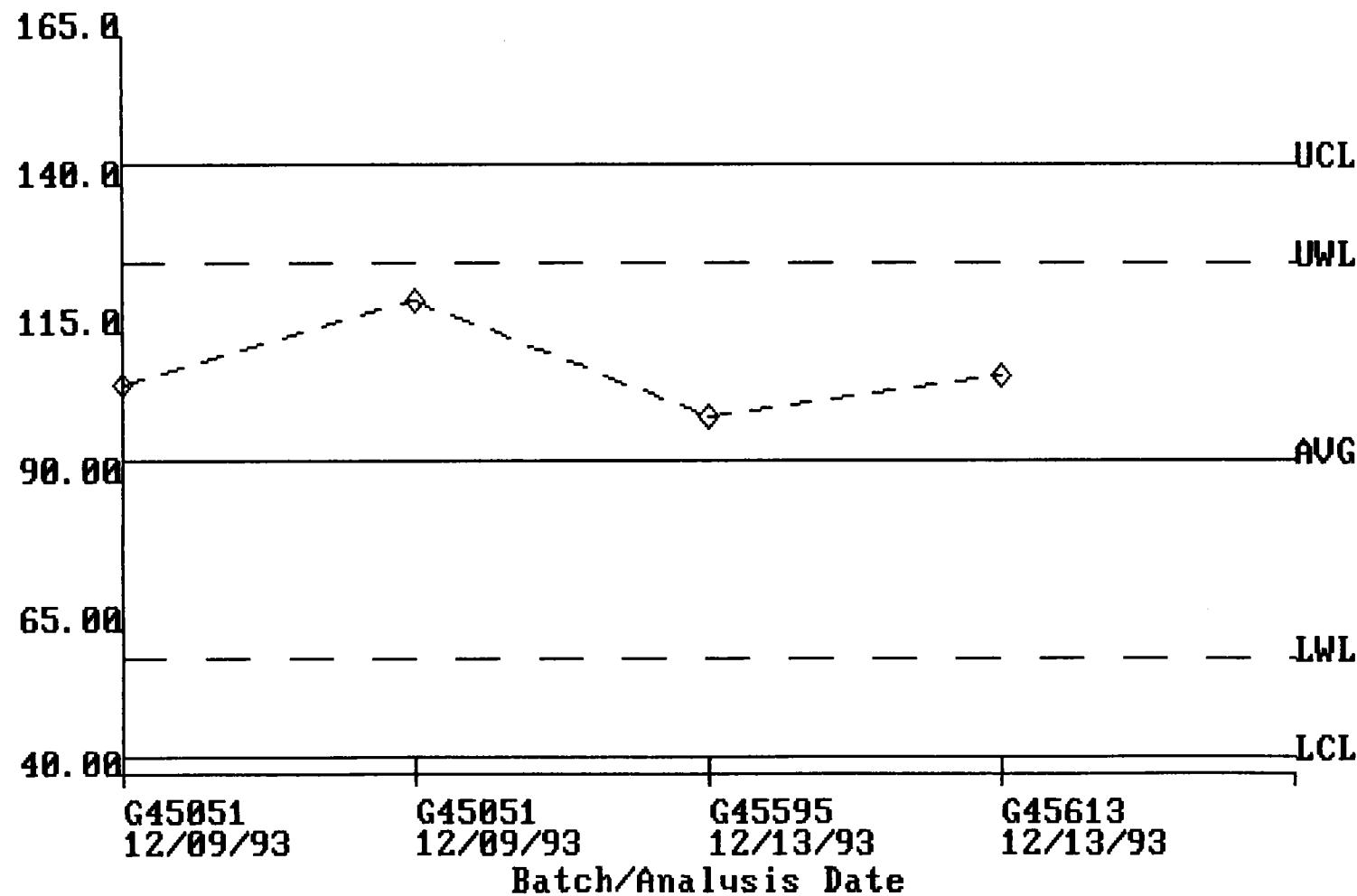
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

0003090

Standard Matrix Spike [SP] CHLOROBENZENE, UG/XG-DRY 34304\*8020-G



## Standard Matrix Spikes (SP) CHLOROBENZENE, UC/KG-DRY 34304\*8020-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G45051	G45051*SP1*SOIL*1	12/09/93	2000	106.00	
G45051	G45051*SP2*SOIL*1	12/09/93	2000	120.00	
G45595	G45595*SP1*SOIL*1	12/13/93	2000	100.50	
G45613	G45613*SP1*SOIL*2	12/13/93	2000	107.50	
U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	AVG REC	STD DEV REC
143.001	42.999	126.334	59.666	93	16.667

## LEGEND

U. = UPPER  
 L. = LOWER  
 W. = WARNING  
 REC = RECOVERY

## REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

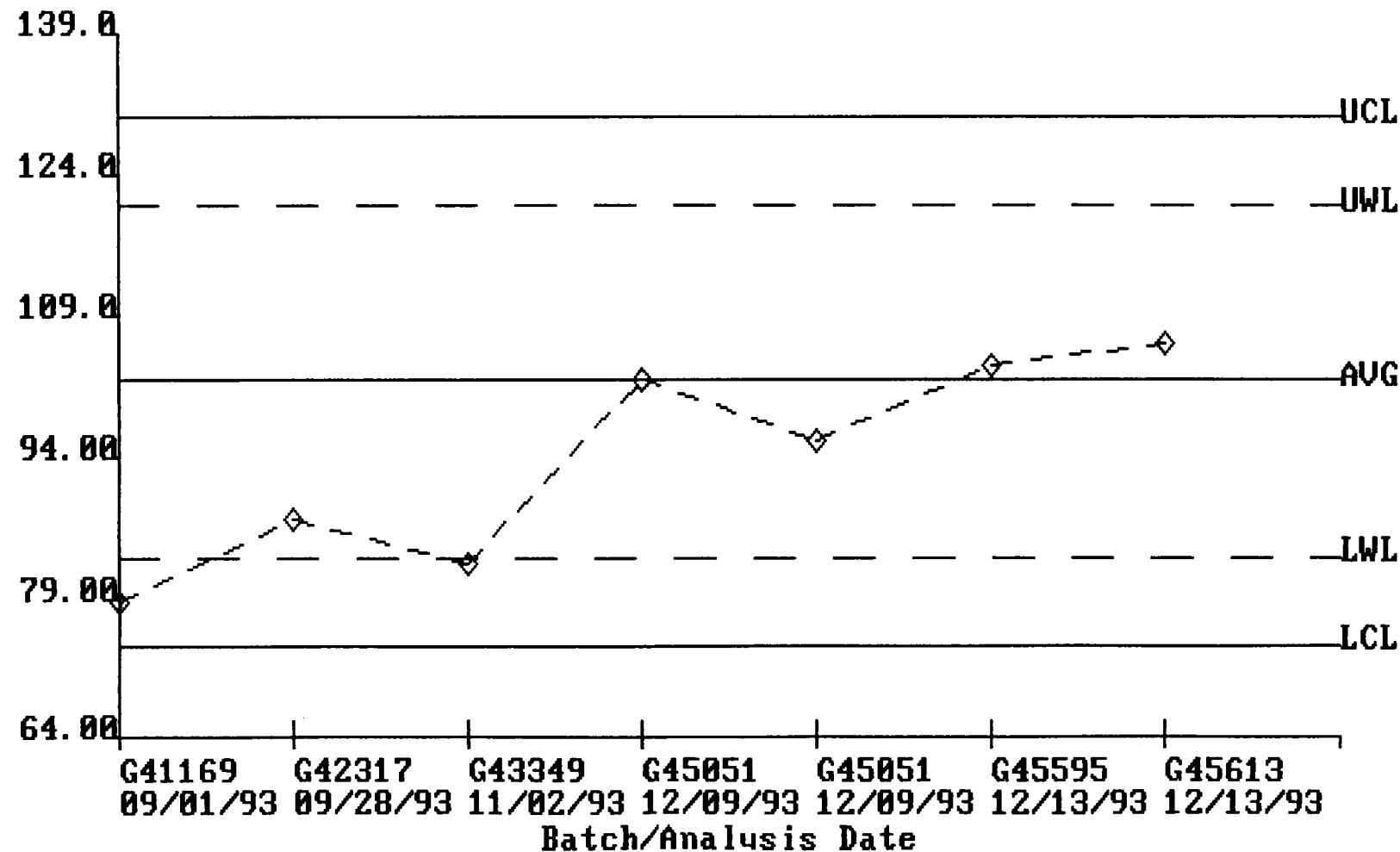
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScrnn

000362

Standard Matrix Spike [SP] BENZENE, UG/KG-DRY 34237\*8020-G



## Standard Matrix Spikes (SP) BENZENE, UG/KG-DRY 34237\*8020-C

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G41169	G41169*SP1*0830*1	09/01/93	2020	78.70	
G42317	G42317*SP1*SOIL*1	09/28/93	1980	37.40	
G43349	G43349*SP1*SOIL*1	11/02/93	1980	32.80	
G45051	G45051*SP1*SOIL*1	12/09/93	2000	102.00	
G45051	G45051*SP2*SOIL*1	12/09/93	2000	95.50	
G45595	G45595*SP1*SOIL*1	12/13/93	2000	103.50	
G45613	G45613*SP1*SOIL*2	12/13/93	2000	106.00	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
129.999	74.001	120.666	83.334	102	9.333

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

USE ACTIVE CONTROL LIMITS FROM STORET FILE

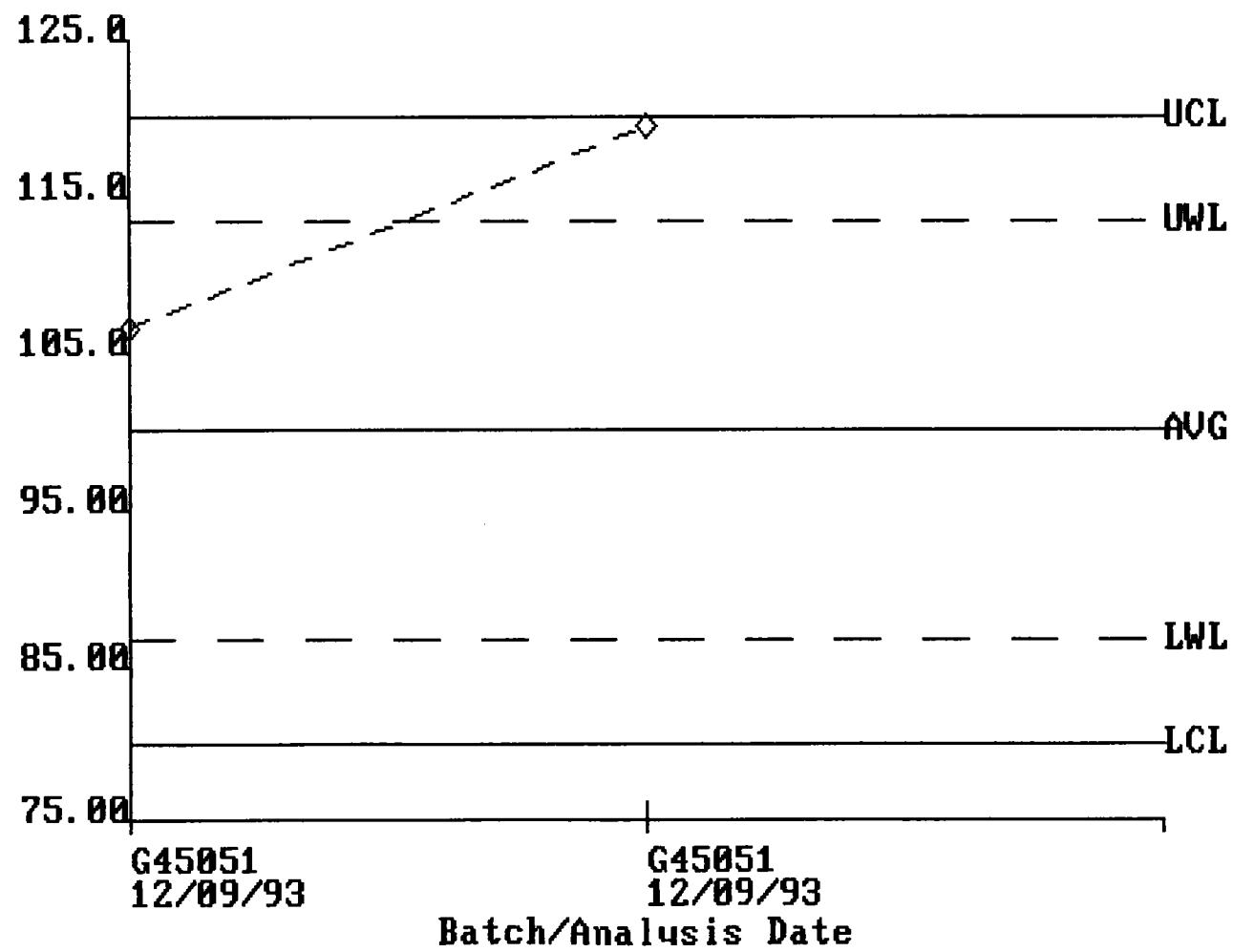
PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScrn

000364



Standard Matrix Spike [SP] DICHLOROBENZENE, TOT., UG/KG-DRY 98578\*8020-G



## Standard Matrix Spikes (SP) DICHLOROBENZENE,TOT., UG/KG-DRY 98578\*8020-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G45051	G45051*SP1*SOIL*1	12/09/93	6000	106.50	
G45051	G45051*SP2*SOIL*1	12/09/93	6000	119.50	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
120.001	79.999	113.334	86.666	100	6.667

LEGEND

U. = UPPER  
 L. = LOWER  
 W. = WARNING  
 REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

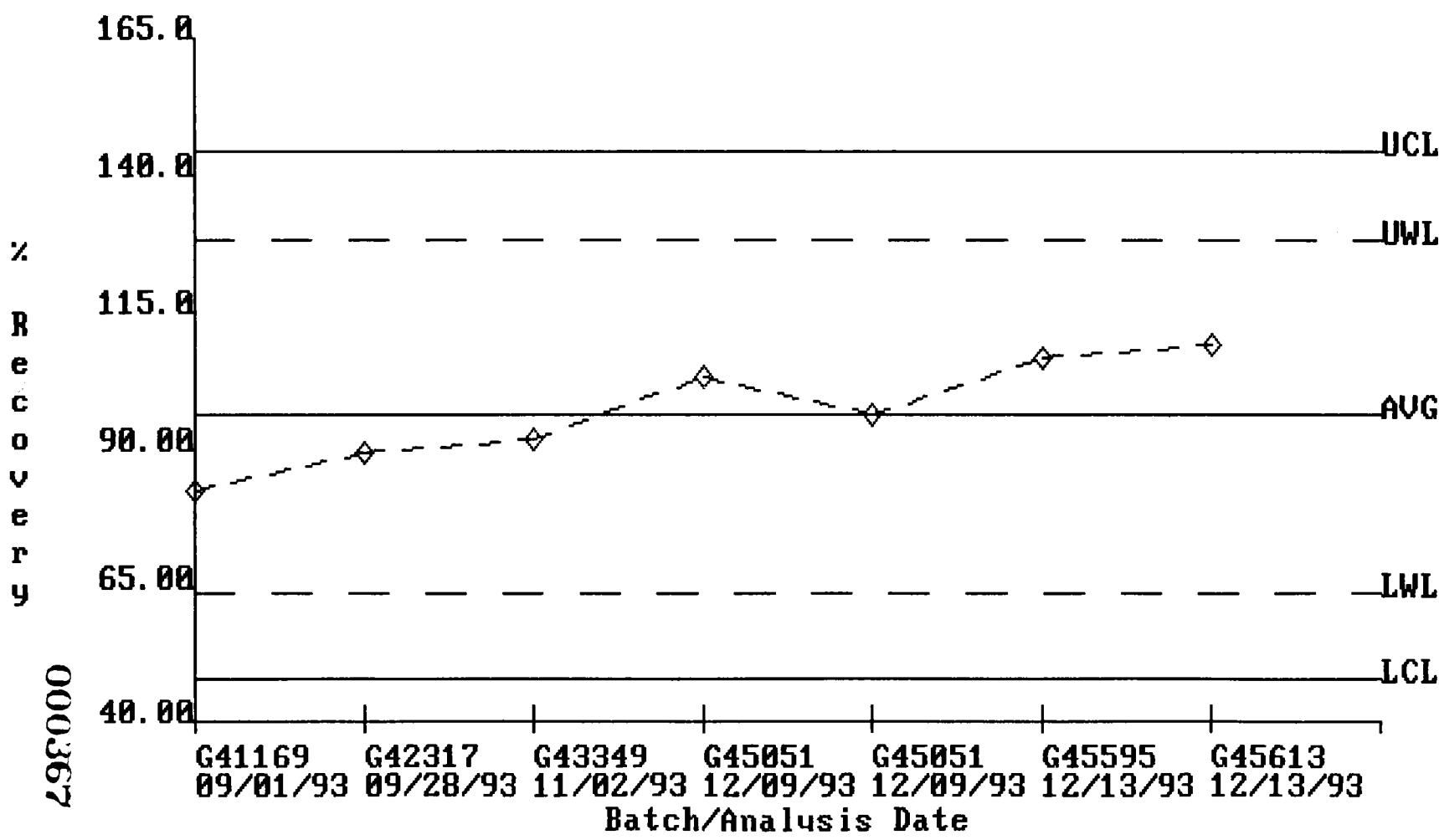
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

000366

Standard Matrix Spike [SP] ETHYLBENZENE, UG/KG-DRY 34374\*8020-G



## Standard Matrix Spikes (SP) ETHYLBENZENE, UG/KG-DRY 34374\*8020-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G41169	G41169*SP1*0830*1	09/01/93	2000	82.50	
G42317	G42317*SP1*SOIL*1	09/28/93	2000	89.50	
G43349	G43349*SP1*SOIL*1	11/02/93	2000	91.50	
G45051	G45051*SP1*SOIL*1	12/09/93	2000	103.00	
G45051	G45051*SP2*SOIL*1	12/09/93	2000	96.00	
G45595	G45595*SP1*SOIL*1	12/13/93	2000	106.50	
G45613	G45613*SP1*SOIL*2	12/13/93	2000	109.00	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	Avg REC	STD DEV REC
144	48	128	64	96	16

LEGEND

U. = UPPER  
 L. = LOWER  
 W. = WARNING  
 REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

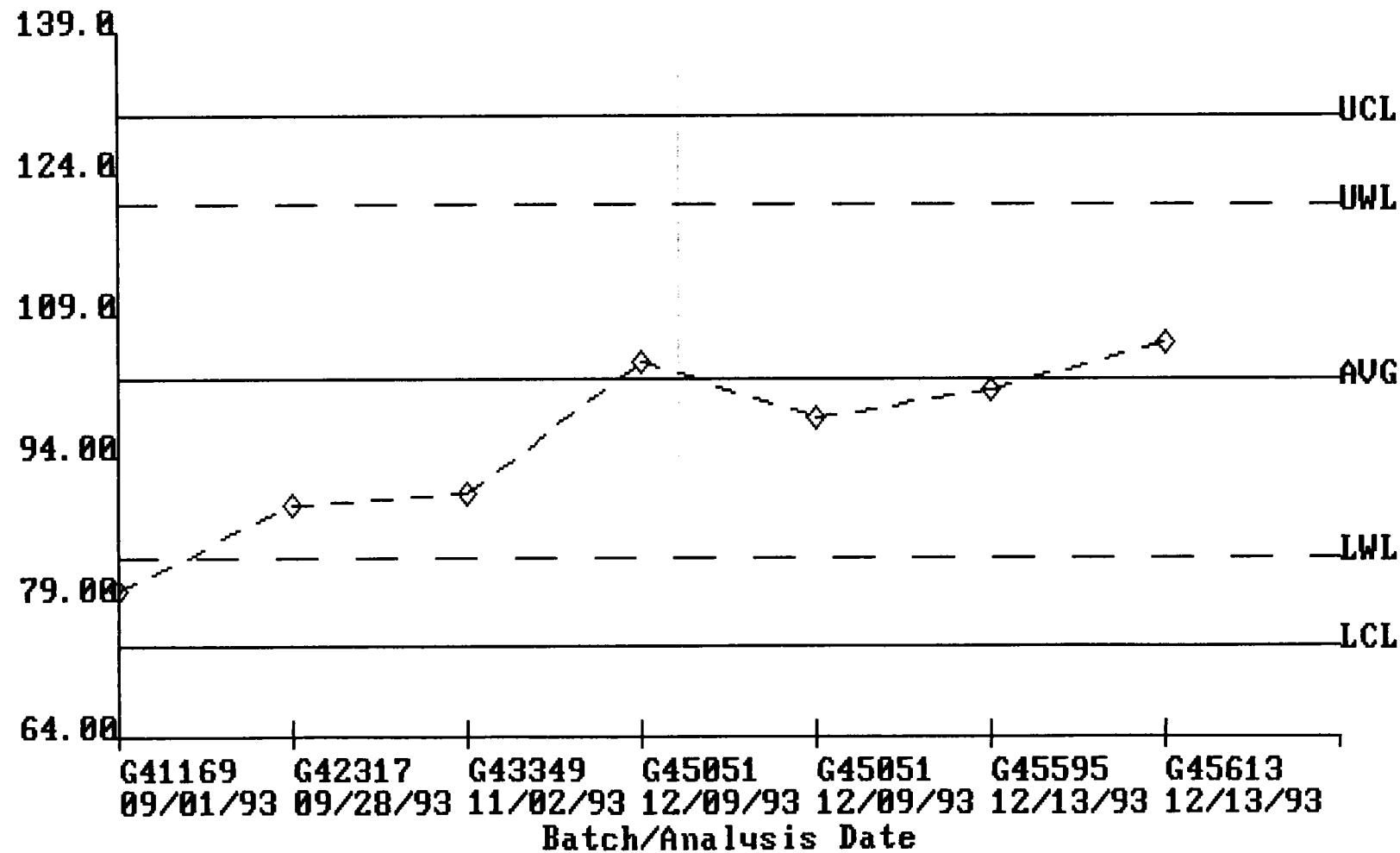
USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScrn

000368

Standard Matrix Spike [SP] TOLUENE, UG/KG-DRY 34483\*8020-G



## Standard Matrix Spikes (SP) TOLUENE, UG/KG-DRY 34483\*8020-G

BATCH	SAMPLE	DATE	TARGET	RECOVERY	COMMENT
G41169	G41169*SP1*0830*1	09/01/93	1980	79.80	
G42317	G42317*SP1*SOIL*1	09/28/93	1980	88.90	
G43349	G43349*SP1*SOIL*1	11/02/93	1980	89.90	
G45051	G45051*SP1*SOIL*1	12/09/93	2000	104.00	
G45051	G45051*SP2*SOIL*1	12/09/93	2000	98.00	
G45595	G45595*SP1*SOIL*1	12/13/93	2000	101.00	
G45613	G45613*SP1*SOIL*2	12/13/93	2000	106.00	

U. LIMIT	L. LIMIT	U. W. LIMIT	L. W. LIMIT	AVG REC	STD DEV REC
129.999	74.001	120.666	83.334	102	9.333

LEGEND

U. = UPPER

L. = LOWER

W. = WARNING

REC = RECOVERY

REPORTING OPTIONS

REPORT LAST N DATA POINTS (ENTER A NUMBER)

EXCLUDE ZERO RECVS FROM STATISTICS

USE ACTIVE CONTROL LIMITS FROM STORET FILE

PLOT QC CHART

AUTO PRINT QC CHARTS TO PRINTER W/O Shift-PrtScr

023000

**SOIL ANALYTICAL RESULTS**  
**MARCH 29, 1994**



**ENSECO-WADSWORTH/ALERT Laboratories**  
*Division of Coming Lab Services, Inc.*

5910 Breckenridge Parkway, Suite H 813-621-0784  
Tampa, FL 33610 FAX 813-623-6021

## **ANALYTICAL REPORT**

PROJECT NO. 8515.30

NSB KINGS BAY

KAREN HARTNETT

ABB ENVIRONMENTAL SERVICES

ENSECO-WADSWORTH/ALERT LABORATORIES  
Certification Numbers: E84059, HRS84297  
FDEP CompQAP: 870270G

*Chris Amstutz*  
Chris Amstutz  
Project Manager

April 14, 1994



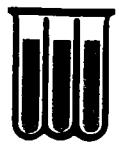
ENSECO-WADSWORTH/ALERT

Laboratory

**EXECUTIVE SUMMARY - Detection Highlights**

B4C310014

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>
<b>NSB-2029-SB15</b>				
Ethylbenzene	28	5.7	ug/kg	SW846 8020
Xylenes, Total	23	5.7	ug/kg	SW846 8020
Petroleum Hydrocarbons Total Recoverable	1,580	57.3	mg/kg	MCAWW 418.1
Solids, Total (TS)	87.2	1.0	%	MCAWW 160.3
<b>NSB-2029-SB16</b>				
Petroleum Hydrocarbons Total Recoverable	57.4	6.1	mg/kg	MCAWW 418.1
Solids, Total (TS)	82.4	1.0	%	MCAWW 160.3
<b>NSB-2029-SB17</b>				
Petroleum Hydrocarbons Total Recoverable	122	6.1	mg/kg	MCAWW 418.1
Solids, Total (TS)	81.5	1.0	%	MCAWW 160.3
<b>NSB-2029-SB18</b>				
Ethylbenzene	1.2	0.15	mg/kg	SW846 8020
Toluene	0.16	0.15	mg/kg	SW846 8020
Xylenes, Total	5.7	0.15	mg/kg	SW846 8020
Petroleum Hydrocarbons Total Recoverable	20,900	610	mg/kg	MCAWW 418.1
Solids, Total (TS)	82.0	1.0	%	MCAWW 160.3
<b>NSB-2029-SB19</b>				
Petroleum Hydrocarbons Total Recoverable	34.4	5.9	mg/kg	MCAWW 418.1
Solids, Total (TS)	85.0	1.0	%	MCAWW 160.3
<b>NSB-2029-SB20</b>				
Petroleum Hydrocarbons Total Recoverable	10,300	283	mg/kg	MCAWW 418.1
Solids, Total (TS)	88.2	1.0	%	MCAWW 160.3
<b>NSB-2029-SB21</b>				
Ethylbenzene	2.7	0.14	mg/kg	SW846 8020



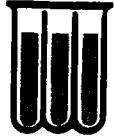
ENSECO-WADSWORTH/ALERT

Laboratory

**EXECUTIVE SUMMARY - Detection Highlights**

B4C310014

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>
<b>NSB-2029-DUP</b>				
Ethylbenzene	3.0	0.14	mg/kg	SW846 8020
Toluene	0.19	0.14	mg/kg	SW846 8020
Xylenes, Total	15	0.14	mg/kg	SW846 8020
Petroleum Hydrocarbons	44,600	1,160	mg/kg	MCAWW 418.1
Total Recoverable Solids, Total (TS)	86.2	1.0	%	MCAWW 160.3

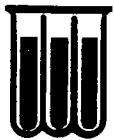


ENSECO-WADSWORTH/ALERT  
Laboratories

## SAMPLE SUMMARY

The analytical results of the samples listed below are presented on the following pages.

<u>WO #</u>	<u>LABORATORY ID</u>	<u>SAMPLE IDENTIFICATION</u>
L6367	B4C310014-001	NSB-2029-SB15
L6369	B4C310014-002	NSB-2029-SB16
L6370	B4C310014-003	NSB-2029-SB17
L6372	B4C310014-004	NSB-2029-SB18
L6373	B4C310014-005	NSB-2029-SB19
L6374	B4C310014-006	NSB-2029-SB20
L6376	B4C310014-007	NSB-2029-SB21
L6377	B4C310014-008	NSB-2029-SB22
L6378	B4C310014-009	NSB-2029-SB23
L6381	B4C310014-010	NSB-2029-SB24
L6382	B4C310014-011	NSB-2029-SB25
L6383	B4C310014-012	NSB-2029-SB26
L6384	B4C310014-013	NSB-2029-SB27
L6386	B4C310014-014	NSB-2029-SB28
L6387	B4C310014-015	NSB-2029-DUP
L6389	B4C310014-016	NSB-2029-EB
L6391	B4C310014-017	TRIP BLANK



ENSECO-WADSWORTH/ALERT

## Laboratories

# **ANALYTICAL METHODS SUMMARY**

Enseco-Wadsworth/ALERT Laboratories utilizes only USEPA approved methods in analytical work. The methods used for the analyses presented in the following report are listed below.

<u>Parameters</u>	<u>Methods</u>
Volatile Organics	USEPA 602
Volatile Organics	SW846 8020
Petroleum Hydrocarbons	MCAWW 418.1
Total Recoverable	
Petroleum Hydrocarbons	MCAWW 418.1 MODIFIED
Total Recoverable	
Solids, Total (TS)	MCAWW 160.3 MODIFIED

### References:

- MCAWW Methods for Chemical Analysis of Water and Wastes, EMSL: Cincinnati, OH: March 1983 and its updates.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, September, 1986.

USEPA Longbottom, J. and Lichtenberg, J., Methods for Organic Chemical Analysis of Municipal and Industrial Waste Water EMSL: Cincinnati, OH, July 1982 and its updates.



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB15

WO #: L6367102

LAB #: B4C310014-001

MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	5.7	SW846 8020	04/08/94	4102046
Ethylbenzene	28	5.7	SW846 8020	04/08/94	4102046
Toluene	ND	5.7	SW846 8020	04/08/94	4102046
Xylenes, Total	23	5.7	SW846 8020	04/08/94	4102046

SURROGATE RECOVERY

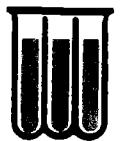
%

ACCEPTABLE LIMITS

Trifluorotoluene 99 ( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB15

WO #: L6367  
LAB #: B4C310014-001  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	REPORTING			<u>METHOD</u>	PREPARATION -		<u>QC</u>	<u>BATCH</u>
		<u>LIMIT</u>	<u>UNIT</u>	<u> </u>		<u>ANALYSIS DATE</u>	<u> </u>		
Petroleum Hydrocarbons Total Recoverable Solids, Total (TS)	1,580	57.3	mg/kg	MCAWW 418.1 M	4/01/94			4091075	
	87.2	1.0	%	MCAWW 160.3 M	4/01/94			4091017	

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB16

WO #: L6369102  
LAB #: B4C310014-002  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	6.1	SW846 8020	04/08/94	4102046
Ethylbenzene	ND	6.1	SW846 8020	04/08/94	4102046
Toluene	ND	6.1	SW846 8020	04/08/94	4102046
Xylenes, Total	ND	6.1	SW846 8020	04/08/94	4102046

SURROGATE RECOVERY

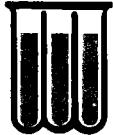
%

ACCEPTABLE LIMITS

Trifluorotoluene 97 ( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB16

WO #: L6369  
LAB #: B4C310014-002  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable	57.4	6.1	mg/kg	MCAWW 418.1 M	4/01/94	4091075
Solids, Total (TS)	82.4	1.0	%	MCAWW 160.3 M	4/01/94	4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB17

WO #: L6370102  
LAB #: B4C310014-003  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	6.1	SW846 8020	04/11/94	4102050
Ethylbenzene	ND	6.1	SW846 8020	04/11/94	4102050
Toluene	ND	6.1	SW846 8020	04/11/94	4102050
Xylenes, Total	ND	6.1	SW846 8020	04/11/94	4102050

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Trifluorotoluene 99 ( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Labs

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB17

WO #: L6370  
LAB #: B4C310014-003  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable	122	6.1	mg/kg	MCAWW 418.1 M	4/01/94	4091075
Solids, Total (TS)	81.5	1.0	%	MCAWW 160.3 M	4/01/94	4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Labs

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB18

WO #: L6372102  
LAB #: B4C310014-004  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT</u> (mg/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS</u> <u>DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	0.15	SW846 8020	04/11/94	4102020
Ethylbenzene	1.2	0.15	SW846 8020	04/11/94	4102020
Toluene	0.16	0.15	SW846 8020	04/11/94	4102020
Xylenes, Total	5.7	0.15	SW846 8020	04/11/94	4102020

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
4-Bromofluorobenzene	109	( 79 - 120 )

NOTE: DRY WEIGHT  
ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Labs

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB18

WO #: L6372  
LAB #: B4C310014-004  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable	20,900	610	mg/kg	MCAWW 418.1 M	4/01/94	4091075
Solids, Total (TS)	82.0	1.0	%	MCAWW 160.3 M	4/01/94	4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB19

WO #: L6373102

LAB #: B4C310014-005

MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	5.9	SW846 8020	04/08/94	4102046
Ethylbenzene	ND	5.9	SW846 8020	04/08/94	4102046
Toluene	ND	5.9	SW846 8020	04/08/94	4102046
Xylenes, Total	ND	5.9	SW846 8020	04/08/94	4102046

SURROGATE RECOVERY

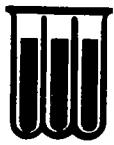
%

ACCEPTABLE LIMITS

Trifluorotoluene 78 ( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB19

WO #: L6373  
LAB #: B4C310014-005  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable	34.4	5.9	mg/kg	MCAWW 418.1 M	4/01/94	4091075
Solids, Total (TS)	85.0	1.0	%	MCAWW 160.3 M	4/01/94	4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB20

WO #: L6374102  
LAB #: B4C310014-006  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	5.7	SW846 8020	04/11/94	4102050
Ethylbenzene	ND	5.7	SW846 8020	04/11/94	4102050
Toluene	ND	5.7	SW846 8020	04/11/94	4102050
Xylenes, Total	ND	5.7	SW846 8020	04/11/94	4102050

SURROGATE RECOVERY

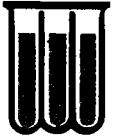
%

ACCEPTABLE LIMITS

Trifluorotoluene 96 ( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB20

WO #: L6374  
LAB #: B4C310014-006  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	REPORTING			<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
	<u>RESULT</u>	<u>LIMIT</u>	<u>UNIT</u>			
Petroleum Hydrocarbons Total Recoverable Solids, Total (TS)	10,300	283	mg/kg	MCAWW 418.1 M	4/01/94	4091075
	88.2	1.0	%	MCAWW 160.3 M	4/01/94	4091017

NOTE: DRY WEIGHT



ENSECO-WADSWORTH/ALERT  
Labs

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB21

WO #: L6376102  
LAB #: B4C310014-007  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (mg/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	0.14	SW846 8020	04/11/94	4102020
Ethylbenzene	2.7	0.14	SW846 8020	04/11/94	4102020
Toluene	0.16	0.14	SW846 8020	04/11/94	4102020
Xylenes, Total	12	0.14	SW846 8020	04/11/94	4102020

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Trifluorotoluene 116 ( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB21

WO #: L6376  
LAB #: B4C310014-007  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

PARAMETER	REPORTING			METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
	RESULT	LIMIT	UNIT			
Petroleum Hydrocarbons Total Recoverable Solids, Total (TS)	33,200	571	mg/kg	MCAWW 418.1 M	4/04- 4/05/94	4094026
	87.6	1.0	%	MCAWW 160.3 M	4/01/94	4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB22

WO #: L6377102  
LAB #: B4C310014-008  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	6.5	SW846 8020	04/08/94	4102046
Ethylbenzene	ND	6.5	SW846 8020	04/08/94	4102046
Toluene	ND	6.5	SW846 8020	04/08/94	4102046
Xylenes, Total	ND	6.5	SW846 8020	04/08/94	4102046

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Trifluorotoluene	96	( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB22

WO #: L6377  
LAB #: B4C310014-008  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	REPORTING <u>LIMIT</u>	UNIT	<u>METHOD</u>	PREPARATION - <u>ANALYSIS DATE</u>	QC <u>BATCH</u>
Petroleum Hydrocarbons Total Recoverable Solids, Total (TS)	ND 77.5	6.5 1.0	mg/kg %	MCAWW 418.1 M MCAWW 160.3 M	4/04- 4/05/94 4/01/94	4094026 4091017

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB23

WO #: L6378102

DATE SAMPLED: 3/28/94

LAB #: B4C310014-009

DATE RECEIVED: 3/31/94

MATRIX: SOLID

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	5.6	SW846 8020	04/08/94	4102046
Ethylbenzene	ND	5.6	SW846 8020	04/08/94	4102046
Toluene	ND	5.6	SW846 8020	04/08/94	4102046
Xylenes, Total	ND	5.6	SW846 8020	04/08/94	4102046

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Trifluorotoluene

82

( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB23

WO #: L6378  
LAB #: B4C310014-009  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable Solids, Total (TS)	67.2 89.0	5.6 1.0	mg/kg %	MCAWW 418.1 M MCAWW 160.3 M	4/04- 4/05/94 4/01/94	4094026 4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Labs

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB24

WO #: L6381102

DATE SAMPLED: 3/28/94

LAB #: B4C310014-010

DATE RECEIVED: 3/31/94

MATRIX: SOLID

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	7.4	SW846 8020	04/08/94	4102046
Ethylbenzene	ND	7.4	SW846 8020	04/08/94	4102046
Toluene	ND	7.4	SW846 8020	04/08/94	4102046
Xylenes, Total	ND	7.4	SW846 8020	04/08/94	4102046

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Trifluorotoluene

96

( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB24

WO #: L6381  
LAB #: B4C310014-010  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable Solids, Total (TS)	ND 67.5	7.4 1.0	mg/kg %	MCAWW 418.1 M MCAWW 160.3 M	4/04- 4/05/94 4/01/94	4094026 4091017

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Labs

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB25

WO #: L6382102  
LAB #: B4C310014-011  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	7.1	SW846 8020	04/08/94	4102046
Ethylbenzene	ND	7.1	SW846 8020	04/08/94	4102046
Toluene	ND	7.1	SW846 8020	04/08/94	4102046
Xylenes, Total	ND	7.1	SW846 8020	04/08/94	4102046

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Trifluorotoluene 97 ( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB25

WO #: L6382  
LAB #: B4C310014-011  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable	44.9	7.1	mg/kg	MCAWW 418.1 M	4/04- 4/05/94	4094026
Solids, Total (TS)	70.3	1.0	%	MCAWW 160.3 M	4/01/94	4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB26

WO #: L6383102  
LAB #: B4C310014-012  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

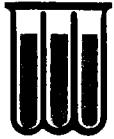
- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT</u> ( <u>ug/kg</u> )	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	6.6	SW846 8020	04/08/94	4102046
Ethylbenzene	ND	6.6	SW846 8020	04/08/94	4102046
Toluene	ND	6.6	SW846 8020	04/08/94	4102046
Xylenes, Total	ND	6.6	SW846 8020	04/08/94	4102046

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Trifluorotoluene	96	( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB26

WO #: L6383  
LAB #: B4C310014-012  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable Solids, Total (TS)	15.6 75.3	6.6 1.0	mg/kg %	MCAWW 418.1 M MCAWW 160.3 M	4/04- 4/05/94 4/01/94	4094026 4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB27

WO #: L6384102

LAB #: B4C310014-013

MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	6.9	SW846 8020	04/08/94	4102046
Ethylbenzene	ND	6.9	SW846 8020	04/08/94	4102046
Toluene	ND	6.9	SW846 8020	04/08/94	4102046
Xylenes, Total	ND	6.9	SW846 8020	04/08/94	4102046

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Trifluorotoluene 95 ( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Labs

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB27

WO #: L6384  
LAB #: B4C310014-013  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable Solids, Total (TS)	17.3 72.3	6.9 1.0	mg/kg %	MCAWW 418.1 M MCAWW 160.3 M	4/05/94 4/01/94	4095048 4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB28

WO #: L6386102  
LAB #: B4C310014-014  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	6.3	SW846 8020	04/08/94	4102046
Ethylbenzene	ND	6.3	SW846 8020	04/08/94	4102046
Toluene	ND	6.3	SW846 8020	04/08/94	4102046
Xylenes, Total	ND	6.3	SW846 8020	04/08/94	4102046

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Trifluorotoluene	93	( 70 - 123 )

NOTE: DRY WEIGHT  
ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Labs

ABB ENVIRONMENTAL SERVICES

NSB-2029-SB28

WO #: L6386

LAB #: B4C310014-014

MATRIX: SOLID

DATE SAMPLED: 3/28/94

DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable	25.4	6.3	mg/kg	MCAWW 418.1 M	4/05/94	4095048
Solids, Total (TS)	79.1	1.0	%	MCAWW 160.3 M	4/01/94	4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Labs

ABB ENVIRONMENTAL SERVICES

NSB-2029-DUP

WO #: L6387102  
LAB #: B4C310014-015  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (mg/kg)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	0.14	SW846 8020	04/11/94	4102020
Ethylbenzene	3.0	0.14	SW846 8020	04/11/94	4102020
Toluene	0.19	0.14	SW846 8020	04/11/94	4102020
Xylenes, Total	15	0.14	SW846 8020	04/11/94	4102020

SURROGATE RECOVERY

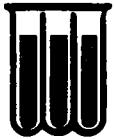
%

ACCEPTABLE LIMITS

Trifluorotoluene 117 ( 70 - 123 )

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-DUP

WO #: L6387  
LAB #: B4C310014-015  
MATRIX: SOLID

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

PARAMETER	REPORTING			METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
	RESULT	LIMIT	UNIT			
Petroleum Hydrocarbons Total Recoverable	44,600	1,160	mg/kg	MCAWW 418.1 M	4/05/94	4095048
Solids, Total (TS)	86.2	1.0	%	MCAWW 160.3 M	4/01/94	4091017

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-EB

WO #: L6389103

LAB #: B4C310014-016

MATRIX: WATER

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/L)</u>	<u>REPORTING LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION- ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	1.0	USEPA 602	04/04/94	4094095
Ethylbenzene	ND	1.0	USEPA 602	04/04/94	4094095
Toluene	ND	1.0	USEPA 602	04/04/94	4094095
Xylenes, Total	ND	1.0	USEPA 602	04/04/94	4094095

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Trifluorotoluene

93

( 73 - 131 )

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

ABB ENVIRONMENTAL SERVICES

NSB-2029-EB

WO #: L6389  
LAB #: B4C310014-016  
MATRIX: WATER

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable	ND	1.0	mg/L	MCAWW 418.1	4/11/94	4101068

**NOTE:** AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Labs

ABB ENVIRONMENTAL SERVICES

TRIP BLANK

WO #: L6391101  
LAB #: B4C310014-017  
MATRIX: WATER

DATE SAMPLED: 3/28/94  
DATE RECEIVED: 3/31/94

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	USEPA 602	04/04/94	4094095
Ethylbenzene	ND	1.0	USEPA 602	04/04/94	4094095
Toluene	ND	1.0	USEPA 602	04/04/94	4094095
Xylenes, Total	ND	1.0	USEPA 602	04/04/94	4094095

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Trifluorotoluene 94 ( 73 - 131 )

NOTE: AS RECEIVED

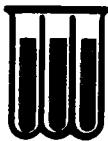
ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT  
Laboratories

## QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



ENSECO-WADSWORTH/ALERT

Laboratories

**QUALITY ASSURANCE / QUALITY CONTROL  
PROGRAM SUMMARY**

Wadsworth/ALERT Laboratories considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

**Surrogate Spike Recovery Evaluations**

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

**Laboratory Analytical Method Blank Evaluations**

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

**Volatiles**

Methylene chloride  
Toluene  
2-Butanone  
Acetone

**Semi-volatiles**

Dimethyl phthalate  
Diethyl phthalate  
Di-n-butyl phthalate  
Butyl benzyl phthalate  
Bis (2-ethylhexyl) phthalate

**Metals**

Calcium  
Magnesium  
Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

**Laboratory Analytical Method Check Sample Evaluations**

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



ENSECO-WADSWORTH/ALERT

Laboratories

**QUALITY ASSURANCE / QUALITY CONTROL  
PROGRAM SUMMARY**

(cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

**Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations**

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

\*\*\*\*\*EXAMPLE\*\*\*\*\*

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	RPD	QC LIMITS RECOVERY
4,4'-DDT	0	95	112	16	22	66-119
Benzene	10	86	93	8	20	39-150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.		accep. method perform range

**Analytical Result Qualifiers**

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

J - indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).

B - indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.

DIL - indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



ENSECO-WADSWORTH/ALERT  
Labs

INTRA-LAB BLANK REPORT

LAB #: B4D040000-095

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT (ug/L)</u>	<u>REPORTING LIMIT</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Benzene	ND	1.0	4/04/94	4094095
Ethylbenzene	ND	1.0	4/04/94	4094095
Toluene	ND	1.0	4/04/94	4094095
Xylenes, Total	ND	1.0	4/04/94	4094095

SURROGATE RECOVERY

	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	( 78 - 122)
Trifluorotoluene	( 73 - 131)

**NOTE:**

ND (NONE DETECTED)



ENSECO-WADSWORTH/ALERT  
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4D120000-046

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT</u> ( <u>ug/kg</u> )	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	5.0	4/08/94	4102046
Ethylbenzene	ND	5.0	4/08/94	4102046
Toluene	ND	5.0	4/08/94	4102046
Xylenes, Total	ND	5.0	4/08/94	4102046

SURROGATE RECOVERY  
Trifluorotoluene

%  
96

ACCEPTABLE LIMITS  
( 70 - 123 )

**NOTE:**

ND (NONE DETECTED)



ENSECO-WADSWORTH/ALERT  
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4D120000-050

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT</u> ( <u>ug/kg</u> )	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	5.0	4/11/94	4102050
Ethylbenzene	ND	5.0	4/11/94	4102050
Toluene	ND	5.0	4/11/94	4102050
Xylenes, Total	ND	5.0	4/11/94	4102050

SURROGATE RECOVERY  
Trifluorotoluene

%  
100

ACCEPTABLE LIMITS  
( 70 - 123 )

**NOTE:**

ND (NONE DETECTED)



ENSECO-WADSWORTH/ALERT  
Labs

INTRA-LAB BLANK REPORT

LAB #: B4D120000-020

- - - - - GC Volatiles - - - - -

<u>PARAMETER</u>	<u>RESULT</u> (mg/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	0.12	4/11/94	4102020
Ethylbenzene	ND	0.12	4/11/94	4102020
Toluene	ND	0.12	4/11/94	4102020
Xylenes, Total	ND	0.12	4/11/94	4102020

SURROGATE RECOVERY

4-Bromofluorobenzene

%

103

ACCEPTABLE LIMITS

( 79 - 120 )

**NOTE:**

ND (NONE DETECTED)



ENSECO-WADSWORTH/ALERT  
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4D010000-075

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	REPORTING <u>LIMIT</u>	<u>UNIT</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons	ND	5.0	mg/kg	4/01/94	4091075
Petroleum Hydrocarbons	ND	5.0	mg/kg	4/04- 4/05/94	4094026
Petroleum Hydrocarbons	ND	5.0	mg/kg	4/05/94	4095048
Petroleum Hydrocarbons	ND	1.0	mg/L	4/11/94	4101068

**NOTE:**

ND (NONE DETECTED)



ENSECO-WADSWORTH/ALERT  
Laboratories

LCS - DCS REPORT

QC BATCH: 4094095  
LAB #: B4D040000-095 C

WO #: L7489  
PREPARATION DATE: 4/04/94  
DATE ANALYZED: 4/04/94

- - - - - GC Volatiles - - - - -

COMPOUND	LCS PERCENT RECOVERY	DCS PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS
Methyl tert-butyl ether	93	97	(70-133)	3.8	20
Benzene	95	99	(76-124)	4.7	20
Toluene	97	102	(81-120)	4.7	20
Ethylbenzene	99	102	(89-120)	3.8	20
Xylenes, Total	93	98	(61-142)	4.3	20



ENSECO-WADSWORTH/ALERT  
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4102046  
LAB #: B4D120000-046 C

PREPARATION DATE: 4/08/94  
DATE ANALYZED: 4/08/94

- - - - - GC Volatiles - - - - -

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Benzene	100	(74-130)
Toluene	102	(72-136)
Ethylbenzene	103	(54-143)
Xylenes, Total	89	(74-128)



ENSECO-WADSWORTH/ALERT  
Laboratories

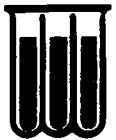
CHECK SAMPLE REPORT

QC BATCH: 4102020  
LAB #: B4D120000-020 C

PREPARATION DATE: 4/11/94  
DATE ANALYZED: 4/11/94

- - - - - GC Volatiles - - - - -

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Benzene	105	(74-130)
Toluene	99	(72-136)
Ethylbenzene	102	(54-143)
Xylenes, Total	103	(74-128)



ENSECO-WADSWORTH/ALERT  
Labs

CHECK SAMPLE REPORT

QC BATCH: 4102050  
LAB #: B4D120000-050 C

PREPARATION DATE: 4/11/94  
DATE ANALYZED: 4/11/94

- - - - - GC Volatiles - - - - -

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Benzene	92	(74-130)
Toluene	94	(72-136)
Ethylbenzene	94	(54-143)
Xylenes, Total	90	(74-128)



ENSECO-WADSWORTH/ALERT  
Laboratories

CHECK SAMPLE REPORT

LAB #: B4C310014

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>COMPOUND</u>	<u>SPIKE PERCENT RECOVERY</u>	<u>LIMITS</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>Q/C BATCH</u>
Petroleum Hydrocarbons Total Recoverable	89	(63-111)	4/01/94	4091075
Petroleum Hydrocarbons Total Recoverable	95	(63-111)	4/04- 4/05/94	4094026
Petroleum Hydrocarbons Total Recoverable	94	(63-111)	4/05/94	4095048
Petroleum Hydrocarbons Total Recoverable	97	(69-125)	4/11/94	4101068



ENSECO-WADSWORTH/ALERT  
Labs

MATRIX SPIKE REPORT

Lot #: B4C310014

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>COMPOUND</u>	RECOVERY				<u>RPD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>Q/C BATCH</u>
	<u>PERCENT</u>	<u>Q/C</u>	<u>LIMITS</u>	<u>RPD</u>			
	<u>MS</u>	<u>MSD</u>					
<b>Lab# B4C310014- 1 Matrix: SOLID</b>							
Petroleum Hydrocarbons	64	72	(50-140)	12	30	4/01/94	4091075
Total Recoverable							
<b>Lab# B4C310014- 7 Matrix: SOLID</b>							
Petroleum Hydrocarbons		DIL				4/04- 4/05/94	4094026
Total Recoverable							
<b>Lab# B4C310014- 13 Matrix: SOLID</b>							
Petroleum Hydrocarbons	82	76	(50-140)	6.7	30	4/05/94	4095048
Total Recoverable							

**NOTE:**

DIL Diluted out

**ENSECO-WADSWORTH/ALERT LABORATORIES**  
**SAMPLE SHIPPER EVALUATION AND RECEIPT FORM**

Client: ABB-ES Project Name/Number: King's Bay

Samples Received By: D. J. St. ENSCO Date Received: 3-31-94  
 (Signature)

Sample Evaluation Form By: D. J. St. ENSCO LAB NO: B4C31004  
 (Signature)

Type of shipping container samples received in? WAL Cooler

Client Cooler  WAL Shipper  Box  Other

Any "NO" responses or discrepancies should be explained in comments section.

- |   | YES                                 | NO                       |
|---|-------------------------------------|--------------------------|
| 1. Were custody seals on shipping container(s) intact?  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Were custody papers properly included with samples?  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Were custody papers properly filled out (ink, signed, match labels)?   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Did all bottles arrive in good condition (unbroken)?   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Were all bottle labels complete<br>(Sample No., date, signed, analysis preservatives)?                                   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Were correct bottles used for the tests indicated?   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Were proper sample preservation techniques indicated?  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. Were samples received within adequate holding time?  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 9. Were all VOA bottles checked for the presence of air bubbles?<br>(If air bubbles were found indicate in comment section) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10. Were samples in direct contact with wet ice?<br>(NOTE TEMPERATURE BELOW)  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 11. Were samples accepted into the laboratory?<br>(If no see comments)  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler #        Temp 5 °C      Cooler #        Temp        °C

Cooler #        Temp        °C      Cooler #        Temp        °C  
 \*not enough water received to do MS/MSD on equipment Blank

L6336 N

**CUSTODY SEAL** ENS-1090-C

3-27-94

Date

Signature

 Enseco  
A Division of CLSI

ENSECO  
A Division of CLSI

No 96337



**SWORTH/ALERT  
LABORATORIES**  
Sampling, testing, mobile labs

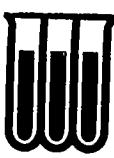
5910 Breckenridge Pkwy.  
Suite H  
Tampa, FL 33610

## **Chain of Custody Record**

Record 2 of 2  
# 2515

Report To:	Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
Cekra Jackson						
Additional Comments:	1	1-11	PA/JW	FEDEX	3-29-94	1100
2 WEEK turnaround	2	1-4,10,11		J. L. ENSECU	3-31-94	12 <sup>00</sup> PM
	3					
	4					
	5					
	6					

**Original Accompanies Shipment**



WADSWORTH/ALERT  
LABORATORIES  
Sampling, testing, mobile labs

5910 Breckenridge Pkwy.  
Suite H  
Tampa, FL 33610

(813) 621-0784  
Fax (813) 623-6021

## Chain of Custody Record

Record 1 of 2  
# 2241

Client:

ABB-ES

Project Name / Location

NSB KINGS PAY, Site 2029

Sampler(s)

RW CDJ

Project #:

8515-3C

Item #	Date	Time	MATRIX	Sample Location	No. Of CONTAINERS	Parameter						Remarks
						VOC - VOC	PAH -	METALS -	TRPH - 4/2.1	EDB -		
1	3-28-94	1345	█████	NSB-2029-SP15	2	1		1				
2		1350	Soil	NSB-2029-SP16	2	1		1				
3		1400		NSB-2029-SP17	2	1		1				
4		1410		NSB-2029-SP18	2	1		1				
5		1420		NSB-2029-SP19	2	1		1				
6		1415		NSB-2029-SP20	2	1		1				
7		1430		NSB-2029-SP21	2	1		1				
8		1440		NSB-2029-SP22	2	1		1				
9		1430		NSB-2029-SP22	2	1		1				
10		1445		NSB-2029-SP24	2	1		1				
11	▼	1500	▼	NSB-2029-SP25	2	1		1				

Total  
Containers

22

Number of Coolers in Shipment

1

Bailers

[REDACTED]

Report To:

Celora Jackson

Additional Comments:

2WEEK TURNAROUND

Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
1	1-11	[Signature]	[Signature] ENSERV	3/31/94	1200 PM
2					
3					
4					
5					
6					

Original Accompanies Shipment

## **APPENDIX D**

### **TABLES**

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- Table 1 Summary of Groundwater Sample Analytical Results, December 17, 1993  
Table 2 Summary of Soil Sample Analytical Results, December 1 and 2, 1993  
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Table 5 Generalized Correlation of Stratigraphic Units, Lithology, and Hydrologic Properties of Formation Pertinent to the Floridan Aquifer System  
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**Table 1**  
**Summary of Groundwater Sample Analytical Results,**  
**December 17, 1993**

Corrective Action Plan  
 Site 2029, Naval Submarine Base  
 Kings Bay, Georgia

Compound	MW1	MW2	MW3	MW4	MW5	MW6	MW7	MW8	DUP <sup>1</sup>	MW9
<b>USEPA Method 602, ppm</b>										
Benzene	<.001	<.001	<.001	<.001	<.001	.00198	<.001	.00127	.00131	<.001
Toluene	<.001	<.001	<.001	<.001	<.001	<.001	<.001	.00153	.00166	<.001
Ethylbenzene	<.001	<.001	<.001	<.001	<.001	.00150	<.001	.00105	.00110	<.001
Xylenes	<.001	<.001	<.001	<.001	<.001	.00170	<.001	.00668	.00647	<.001
Methyl tert-butyl ether	<.001	<.001	<.001	.00136	<.001	<.001	.00580	.00172	.00172	<.001
<b>USEPA Method 610, ppb</b>										
Acenaphthalene	<1.47	<1.47	<1.47	6.70	<1.47	<1.47	<1.47	2.56	2.48	<1.47
Anthracene	<.089	<.089	0.159	2.00	<.089	0.140	0.490	<.089	<.089	0.525
Benzo(a)anthracene	<.002	<.002	0.010	0.096	<.002	0.022	0.048	<.002	0.004	0.049
Benzo(a)pyrene	<.001	<.001	0.005	0.028	<.001	0.002	<.001	<.001	<.001	0.011
Benzo(b)fluoranthene	0.007	0.003	0.017	0.063	<.001	0.029	0.079	0.003	0.005	0.108
Benzo(g,h,i)perylene	<.004	<.004	<.004	0.157	<.004	0.041	0.129	0.012	0.034	0.040
Benzo(k)fluoranthene	<.0004	.0008	0.002	0.025	<.0004	0.002	0.008	.0009	0.002	0.011
Chrysene	<.031	<.031	<.031	0.537	<.031	0.060	0.165	<.031	0.247	0.355
Dibenzo(a,h)anthracene	<.003	<.003	<.003	0.170	<.003	0.003	0.016	<.003	<.003	0.009
Fluoranthene	0.007	0.008	0.011	0.047	0.004	0.026	0.147	0.006	0.008	0.126
Fluorene	<.247	<.247	1.43	1.31	<.247	0.806	0.372	1.21	1.36	1.09
Indeno(1,2,3-cd)pyrene	<.003	<.003	<.003	0.084	<.003	0.019	0.072	<.003	0.010	0.030
Phenanthrene	0.092	0.080	0.324	2.84	<.065	0.962	1.44	<.065	<.065	0.538
Pyrene	0.425	<.026	1.19	2.28	<.026	2.93	5.15	0.383	0.645	4.96
Naphthalene	<.917	<.917	<.917	1.01	<.917	5.83	2.70	6.31	6.29	<.917
1-Methylnaphthalene	<1.24	<1.24	<1.24	2.72	<1.24	1.55	<1.24	<1.24	<1.24	<1.24
2-Methylnaphthalene	<1.20	<1.20	<1.20	2.97	<1.20	1.68	<1.20	<1.20	<1.20	<1.20
Total PAH	0.531	0.0918	3.148	23.037	0.004	14.102	10.816	10.485	11.085	7.852
<b>USEPA Method 418.1, ppm</b>										
TRPH	<0.18	0.32	<0.19	<0.19	<0.18	<0.19	<0.18	<0.18	<0.18	<0.19

<sup>1</sup>The duplicate sample, designated DUP, was taken from MW8.

Notes: USEPA = U.S. Environmental Protection Agency.

ppm = parts per million.

ppb = parts per billion.

Total PAH - the sum concentration of polynuclear aromatic hydrocarbons.

TRPH = total recoverable petroleum hydrocarbons.

**Table 2**  
**Summary of Soil Sample Analytical Results,**  
**December 1 and 2, 1993**

Corrective Action Plan  
 Site 2029, Naval Submarine Base  
 Kings Bay, Georgia

Compound	SB1 2-4' bls	SB1 5-7' bls	SB2 2-4' bls	SB3 2-4' bls	SB4 2-4' bls	SB5 2-4' bls	SB6 2-4' bls	<sup>1</sup> DUP1	SB7 2-4' bls	SB7 4-6' bls
<b>USEPA Method 8020, ppm</b>										
Benzene	<.115	<.122	<.121	<.133	<.123	<.123	<.116	<.115	<.114	<.118
Toluene	<.115	<.122	<.121	<.133	<.123	<.123	<.116	<.115	<.114	<.118
Ethylbenzene	<.115	<.122	<.121	<.133	<.123	<.123	<.116	<.115	<.114	<.118
Xylenes	<.115	<.122	<.121	<.133	<.123	<.123	<.116	<.115	<.114	<.118
Total BTEX	<.460	<.488	<.484	<.532	<.492	<.492	<.464	<.460	<.456	<.472
<b>USEPA Method 418.1, ppm</b>										
TRPH	<32.8	<34.5	<34.3	<38.1	<24.8	1110	<33.1	46.5	<32.2	<33.5
Compound	SB8 2-4' bls	SB8 4-6' bls	SB9 2-4' bls	SB10 2-4' bls	SB11 2-4' bls	<sup>2</sup> DUP2	<sup>3</sup> SB12 2-4' bls	SB13 2-4' bls	SB14 2-4' bls	SB14 4-6' bls
<b>USEPA Method 8020, ppm</b>										
Benzene	<.120	<.122	<.113	<.120	<.125	<.122	<.114	<.116	<.117	<.121
Toluene	<.120	<.122	<.113	<.120	<.125	<.122	<.114	<.116	<.117	<.121
Ethylbenzene	<.120	<.122	<.113	<.120	<.125	<.122	<.114	<.116	<.117	<.121
Xylenes	<.120	<.122	<.113	<.120	<.125	<.122	<.114	<.116	<.117	<.121
Total BTEX	<.480	<.488	<.452	<.480	<.500	<.488	<.456	<.464	<.168	<.484
<b>USEPA Method 418.1, ppm</b>										
TRPH	<34.0	<35.0	<32.1	60.5	50.8	<34.6	<32.2	<33.1	36.3	49.4

<sup>1</sup>Duplicate sample one, designated DUP1, was taken from SB6.

<sup>2</sup>Duplicate sample two, designated DUP2, was taken from SB11.

<sup>3</sup>The sample SB12 is mislabeled in the laboratory data sheets as DUP2-2.

Notes: bls = below land surface.

U.S. Environmental Protection Agency.

ppm = parts per million.

Total BTEX = the sum concentration of benzene, toluene, ethylbenzene, and xylenes.

TRPH = total recoverable petroleum hydrocarbons.

**Table 3**  
**Summary of Soil Sample Analytical Results,**  
**March 29, 1993**

Corrective Action Plan Site 2029, Naval Submarine Base Kings Bay, Georgia								
Compound	SB15 1' bls	SB16 1.5' bls	SB17 1.5' bls	SB18 1' bls	SB19 1' bls	SB20 1' bls	SB21 1' bls	SB21 DUP
<b>USEPA Method 8020, ppm</b>								
Benzene	<0.006	<0.006	<0.006	<0.15	<0.006	<0.006	<0.14	<0.14
Toluene	<0.006	<0.006	<0.006	0.16	<0.006	<0.006	0.16	0.19
Ethylbenzene	0.028	<0.006	<0.006	1.20	<0.006	<0.006	2.70	3.00
Xylenes	0.023	<0.006	<0.006	5.70	<0.006	<0.006	12.0	15.0
Total BTEX	0.051N	<0.024	<0.024	7.06N	<0.024	<0.024	14.86N	18.19N
<b>USEPA Method 418.1, ppm</b>								
TRPH	1580	57.4	122	20900	34.4	10300	33200	44600
Compound	SB22 1' bls	SB23 1' bls	SB24 1' bls	SB25 1' bls	SB26 1' bls	SB27 1' bls	SB28 1' bls	
<b>USEPA Method 8020, ppm</b>								
Benzene	<0.007	<0.006	<0.007	<0.007	<0.007	<0.007	<0.006	
Toluene	<0.007	<0.006	<0.007	<0.007	<0.007	<0.007	<0.006	
Ethylbenzene	<0.007	<0.006	<0.007	<0.007	<0.007	<0.007	<0.006	
Xylenes	<0.007	<0.006	<0.007	<0.007	<0.007	<0.007	<0.006	
Total BTEX	<0.028	<0.024	<0.028	<0.028	<0.028	<0.028	<0.028	<0.024
<b>USEPA Method 418.1, ppm</b>								
TRPH	<6.5	67.2	<7.4	44.9	15.6	17.3	25.4	
Notes: bls = below land surface. DUP = duplicate sample. USEPA = U.S. Environmental Protection Agency. Total BTEX = the sum concentration of benzene, toluene, ethylbenzene, and xylenes. N = actual value may be greater than the reported value. TRPH = total recoverable petroleum hydrocarbons.								

**Table 4**  
**Monitoring Well and Survey Data**

Corrective Action Plan  
Site 2029, Naval Submarine Base  
Kings Bay, Florida

Well Number	Total Depth	Screened Interval	Top of Casing Elevation	December 16, 1993	
				Depth to Water	Groundwater Elevation
MW1	11.65	1.2 to 11.2	27.81	3.35	24.46
MW2	12.00	1.5 to 11.5	26.89	2.70	24.19
MW3	12.46	2.0 to 12.0	27.49	3.18	24.31
MW4	12.53	2.0 to 12.0	27.37	2.82	24.55
MW5	12.56	2.1 to 12.1	28.78	4.27	24.51
MW6	12.25	1.8 to 11.8	28.78	4.33	24.45
MW7	12.35	1.8 to 11.8	27.81	3.40	24.41
MW8	14.20	3.7 to 13.7	29.91	5.43	24.48
MW9	14.30	3.8 to 13.8	29.13	4.65	24.48

Notes: All measurements recorded in feet.  
A 6-inch sump was installed with each well.

Table 5

**Generalized Correlation of Stratigraphic Units, Lithology, and Hydrologic Properties  
of Formation Pertinent to the Floridan Aquifer System**

Corrective Action Plan  
Site 2029, Naval Submarine Base  
Kings Bay, Georgia

System	Series	Gulf Coast Stage	Northeast Florida and Extreme Southeast Georgia		
			Stratigraphic Unit	Lithology	Hydrostratigraphic Graphic Unit/Hydrologic properties
Quaternary	Holocene and Pleistocene		Alluvium and terrace deposits	Chiefly sand, gravel, clay, shells, limestone, and marl.	Surficial Aquifer - low to moderate yields.
Tertiary	Pliocene		Charlton Formation	Shells, sand, and marl.	Surficial Aquifer - low to moderate yields.
	Miocene		Hawthorn Formation	Chiefly interbedded sand, clay, and dolomite, and sandy phosphatic dolomite and marl.	Upper Confining Unit - low to moderate amounts of artesian and nonartesian water. Most of the Hawthorn forms the upper confining unit for the underlying artesian water, but in places, the lower part may be hydraulically connected to the Upper Floridan aquifer.
	Oligocene	Chickasawhayan	Suwannee Limestone	Limestone ranging from soft, chalky, and fossiliferous to dense, calcified, saccharoidal, and unfossiliferous, containing many solution cavities in recharge area.	Upper Floridan - yields moderate to large amounts of water, but generally less than underlying Eocene formations. Uppermost unit of the Floridan aquifer system.
	Upper Eocene	Jacksonian	Ocala Limestone	White to gray, fossiliferous, recrystallized, porous limestone containing large solution cavities and caves in recharge areas as well as depth downgradient.	Upper Floridan - prolific aquifer; yields as much as 7,500 gallons per minute from two distinct water-bearing zones near the top and base of the formation.
	Middle Eocene	Claibornian	Avon Park Formation	Cream-colored to brown, chalky to well indurated, pelletal to micritic limestone interbedded with cream-colored to dark-brown, fine to medium crystalline, slightly vuggy dolomite.	Middle Confining Unit/Lower Floridan - not a significant contributor to the Floridan aquifer system in southeast Georgia. Yields moderate to large amounts of water in northeast Florida where the dolomite contains secondary permeability solution cavities.
	Lower Eocene	Sabinian	Oldsmar Formation	Off-white to light gray micritic limestone, interbedded with gray to light-brown, fine to medium crystalline, commonly vuggy dolomite. In places, contains pore-filling gypsum and thin beds of anhydrite.	Lower Floridan - upper part acts as a semiconfining bed to basal part, which yields large amounts of water.
	Paleocene	Midwayan	Cedar Keys Formation	Gray and cream-colored, dolomitized limestone containing gypsum and anhydrite stringers, to finely crystalline dolomite and anhydrite.	Fernandina Zone - extremely low permeability. Acts as the lower confining unit of the Floridan aquifer system except where permeable in the Brunswick, Ga., area, where it is part of the Lower Floridan aquifer. Contains mineralized water there.
Cretaceous	Upper	Navarroan	Lawson Limestone	Light-tan to orange, recrystallized, sandy, porous dolostone and calcarenite.	Fernandina Zone - low permeability. Extremely high permeability locally in the Brunswick, Georgia, area where it is part of the Lower Floridan aquifer. Contains highly mineralized water there.
	Tayloran	Undifferentiated		White to cream-colored, argillaceous, soft, chalky limestone to hard, gray, shaly marl.	Low permeability. Locally acts as the lower confining unit of the Floridan aquifer system in the Brunswick, Georgia, area.

Source: Modified, Krause and Randolph, 1989.

**Table 6**  
**Summary of Water Supply Well Data**

Corrective Action Plan  
Site 2029, Naval Submarine Base  
Kings Bay, Florida

Map Number <sup>1</sup>	Latitude	Longitude	Casing Depth	Well Depth	Station Name <sup>2</sup>	Well Use
1	30°46'27"	81°37'12"	80	474	Rayonier, Inc.	Unused
2	30°47'51"	81°32'01"	302	--	NSB Refill Station	Unused
3	30°49'10"	81°32'38"	186	516	NSB Etowah	Recreational
4	30°52'08"	81°35'03"	--	650	W. Bailey	--
5	30°46'08"	81°34'52"	--	750	Finn & Neighbor	--
6	30°45'10"	81°34'38"	525	770	G. H. Davis	Domestic
7	30°50'37"	81°33'23"	261	470	Crooked River State Park	Unused
8	30°50'45"	81°33'46"	250	656	American Legion	--
9	30°48'00"	81°31'05"	145	486	NSB Club	Unused
10	30°50'31"	81°34'27"	450	650	R. Norieka	Domestic
11	30°47'56"	81°31'11"	555	990	NSB TW1	Observational
12	30°47'39"	81°34'31"	585	894	NSB 1	Raw Water Supply
13	30°47'43"	81°33'42"	585	813	NSB 2	Raw Water Supply
14	30°47'52"	81°31'12"	500	810	NSB 4	Raw Water Supply
15	30°47'59"	81°31'19"	500	800	NSB 3	Fire Fighting
16	30°49'13"	81°35'31"	--	575	C. Drury, Laurel Island	Unused
17	30°51'57"	81°31'56"	66	340	Brunswick Pulp and Paper	Unused
18	30°47'49"	81°33'53"	100/560/ 950	1150	NSB Observ. No. 1	Observational
19	30°47'49"	81°33'53"	100	750	NSB Observ. No. 2	Observational
20	30°49'16"	81°36'07"	245	650	Joiner/Greene/Crocker/O'Neil	Domestic
21	30°45'15"	81°36'57"	87	111	Osprey Cove Golf Course	Institutional
22	30°45'15"	81°36'57"	334	502	Osprey Cove Golf Course	Institutional
23	30°49'42"	81°34'12"	--	45	Private Residence	Domestic
24	30°49'45"	81°34'06"	--	45	Private Residence	Domestic
25	30°52'13"	81°36'57"	--	~200	Sadler Cove (39)	--
26	30°52'06"	81°37'04"	--	~200	Mallard Pointe (112)	--
27	30°52'27"	81°36'49"	--	~200	Sadler Creek (112)	--
28	30°50'29"	81°36'29"	--	~200	London Hill (16)	--
29	30°52'16"	81°35'04"	--	~200	Harriett's Bluff (6)	--
30	30°50'35"	81°34'17"	--	~125	Timber Ridge (5)	--

See notes at end of table.

**Table 6 (Continued)**  
**Summary of Water Supply Well Data**

Corrective Action Plan  
 Site 2029, Naval Submarine Base  
 Kings Bay, Florida

Map Number <sup>1</sup>	Latitude	Longitude	Casing Depth	Well Depth	Station Name <sup>2</sup>	Well Use
31	30°50'22"	81°34'31"	--	~125	Elliott's Plantation	--
32	30°50'30"	81°34'22"	--	~125	Riverbend (3)	--
33	30°50'39"	81°34'19"	--	~125	Marsh Point	--
34	30°50'23"	81°34'09"	--	~125	Foxwood (40)	--
35	30°45'36"	81°34'43"	--	~60	Gaines Davis (7)	--
36	30°45'57"	81°34'48"	--	~60	New Hope Baptist Church	--
37	30°45'39"	81°36'06"	--	~60	Woodsville	--
38	30°45'02"	81°34'25"	--	~60	Bank South	--
39	30°45'10"	81°35'10"	--	~60	Shadowlawn (4)	--
40	30°45'29"	81°31'26"	--	~85	N. River Oaks (9)	--
41	30°45'25"	81°31'21"	--	~85	Highland Oaks (23)	--
42	30°45'22"	81°31'31"	--	--	River Oaks (24)	--
43	30°45'13"	81°31'35"	--	~85	Chaney's MHP (2)	--
44	30°45'10"	81°31'22"	--	~85	Pagan Street	--
45	30°44'50"	81°31'25"	--	~85	Marchi Drive	--
46	30°44'39"	81°31'28"	--	~85	Lonsome Pine Rd.	--
47	30°45'21"	81°31'20"	--	~85	Palmetto Street	--
48	30°47'14"	81°35'17"	--	--	City of St. Marys	Public Supply
49	30°45'01"	81°33'45"	--	--	City of St. Marys	Public Supply
50	30°45'52"	81°34'25"	--	--	City of St. Marys	Standby Public Supply
51	30°44'24"	81°33'02"	--	--	City of St. Marys	Standby Public Supply
52	30°45'00"	81°31'24"	--	--	Point Peter	--
53	30°50'07"	81°34'18"	--	--	Unnamed	--
54	30°47'58"	81°32'45"	--	--	NSB 6	Raw Water Supply
55	30°"	81°"	--	--	NSB 5	Raw Water Supply

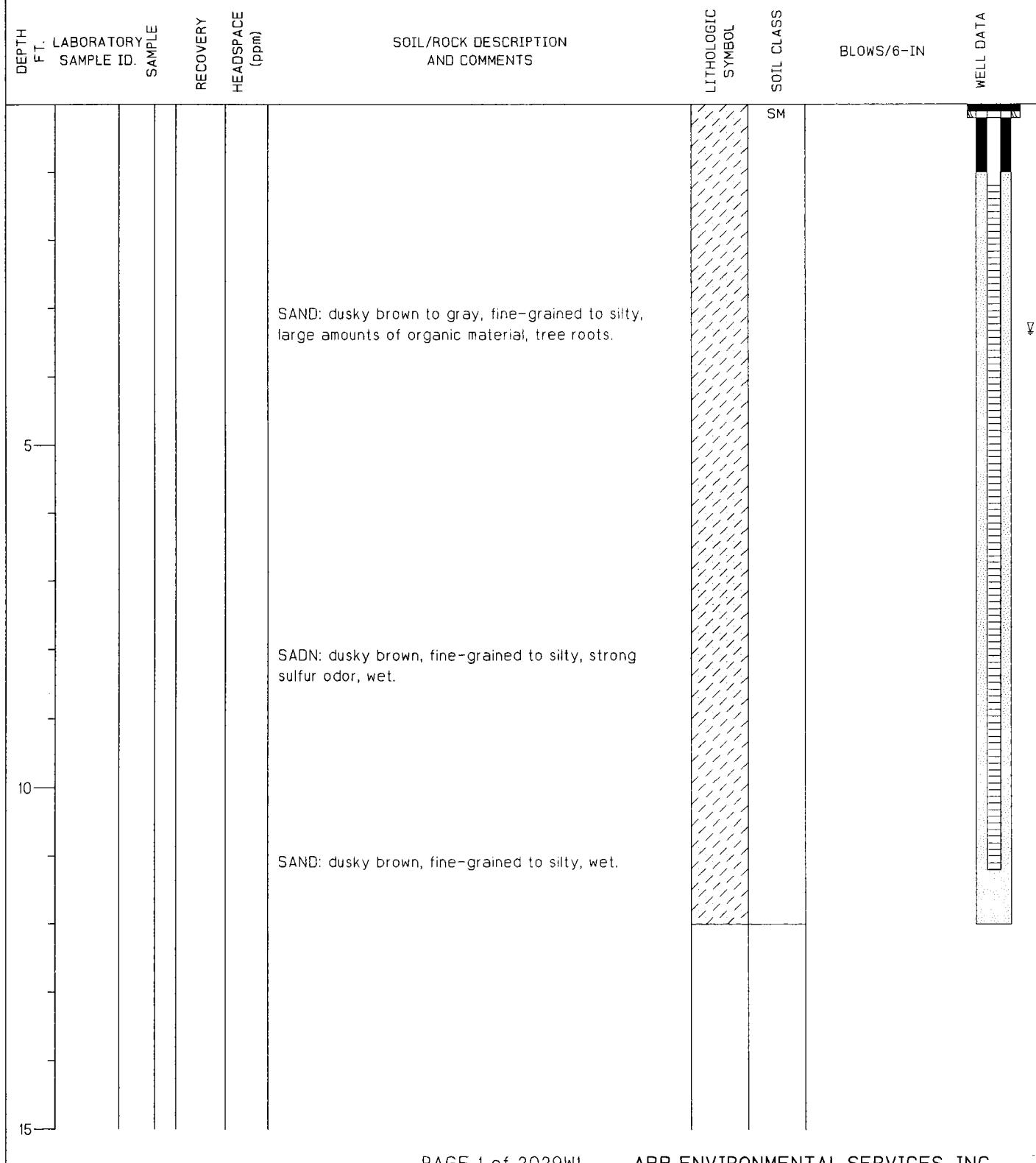
<sup>1</sup>Map number corresponds to the location identified in Appendix G, Plat 1.

<sup>2</sup>Number in parentheses indicates the total number of supply wells in the area of the station.

Note: Shaded water wells are within a 3-mile radius of Site 2029. All others located outside the 3-mile radius.

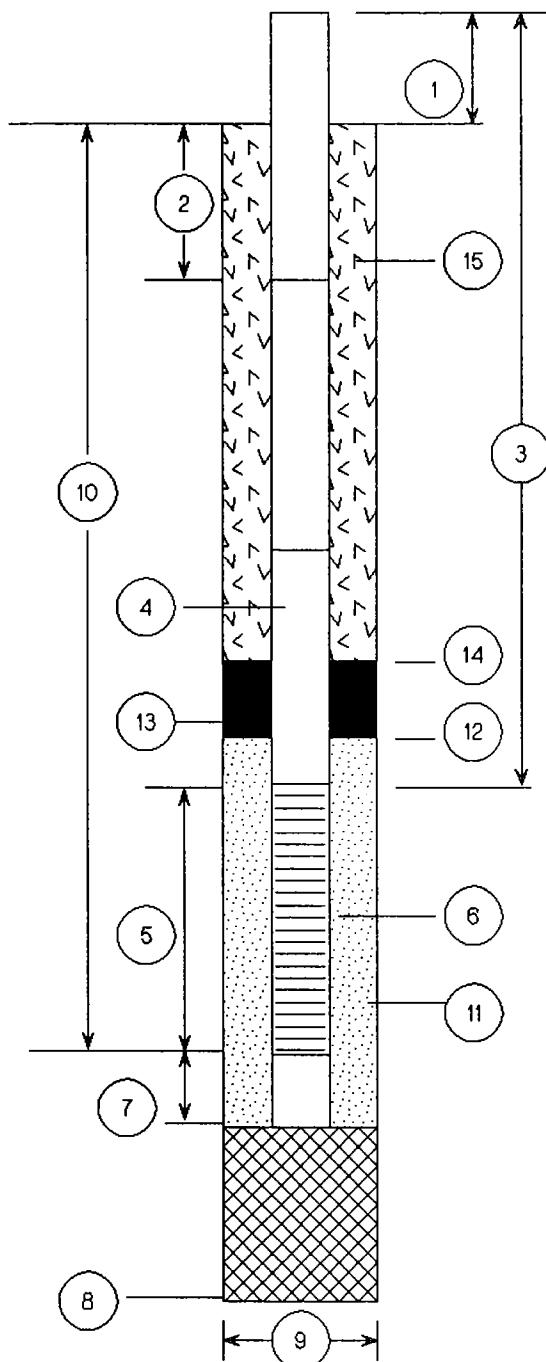
**APPENDIX E**  
**LITHOLOGIC LOGS**

TITLE: NSB Kings Bay		LOG of WELL: NSB-2029-MW1	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: Ivey Drilling Company		DATE STARTED: 12/14/93	COMPLTD: 12/14/93
METHOD: 4.25" ID HSA	CASE SIZE: 2 inches	SCREEN INT.: 1.2-11.2'	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 11.65FT.	DPTH TO $\downarrow$ 3.35 FT.
LOGGED BY: C. Jackson	WELL DEVELOPMENT DATE: 12/13/93		SITE: 2029



## NSB KINGS BAY

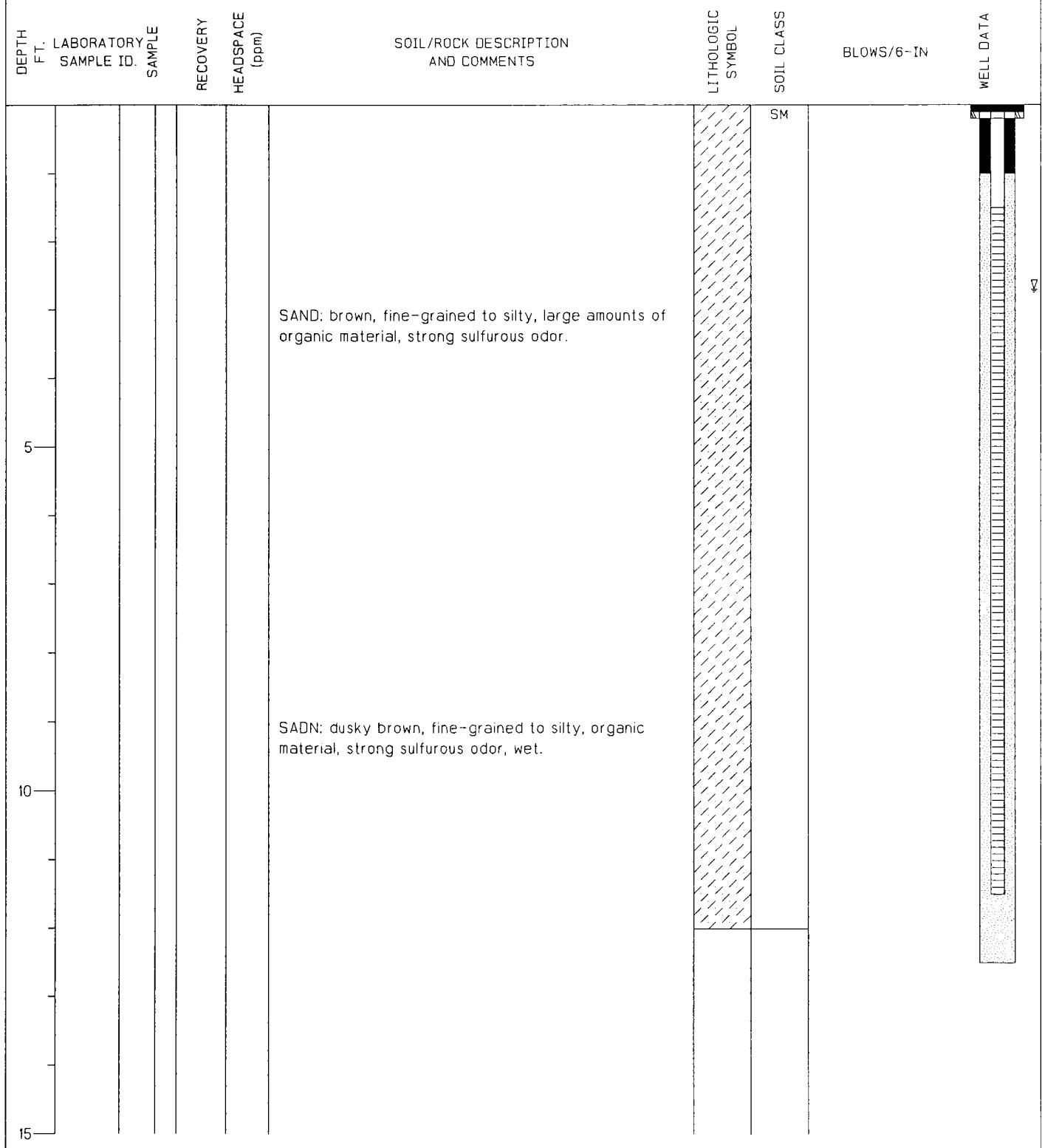
SITE 2029  
 DFM Storage Tank Facility  
 Kings Bay, Georgia

WELL CONSTRUCTION DETAILWELL NUMBER: NSB-2029-MW1DATE OF INSTALLATION: 12/14/931. Height of Casing above ground: 0 feet2. Depth to first Coupling: 1.15 feetCoupling Interval Depths: 10 feet3. Total Length of Riser Pipe: 1.15 feet4. Type of Riser Pipe: 2" DIA SCH. 40 PVC5. Length of Screen: 10 feet6. Type of Screen: 2" DIA. SCH 40 PVC, 0.010" slot7. Length of Sump: 0.5 feet8. Total Depth of Boring: 11.85 feet9. Diameter of Boring: 7 inches (nominal)10. Depth to Bottom of Screen: 11.15 feet11. Type of Screen Filter: Silica SandQuantity Used: 5 - 50 lb bagsSize: 20/3012. Depth to Top of Filter: 1 feet13. Type of Seal: BentoniteQuantity Used: 7 lbs14. Depth to Top of Seal: 0.5 feet15. Type of Grout: Portland Type IGrout Mixture: 5% BentoniteMethod of Placement: Poured16. Stabilizers: N/A

## COMMENTS ON INSTALLATION

This well was completed with a flush-mount vault and pad.

TITLE: NSB Kings Bay		LOG of WELL: NSB-2029-MW2	BORING NO.
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: 8515-30
CONTRACTOR: Ivey Drilling Company		DATE STARTED: 12/14/93	COMPLTD: 12/14/93
METHOD: 4.25" ID HSA	CASE SIZE: 2 inches	SCREEN INT.: 1.5-11.5'	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 12.00FT.	DPHTH TO $\nabla$ 2.70 FT.
LOGGED BY: C. Jackson	WELL DEVELOPMENT DATE: 12/13/93	SITE: 2029	



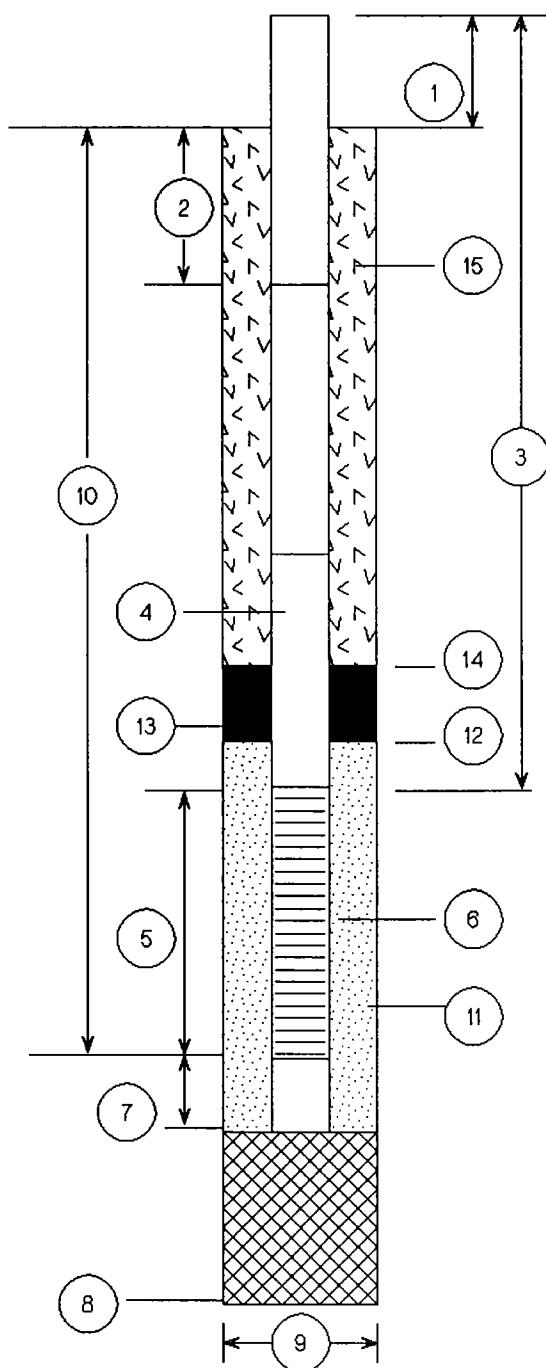
NSB KINGS BAY

SITE 2029  
DFM Storage Tank Facility  
Kings Bay, Georgia

WELL CONSTRUCTION DETAIL

WELL NUMBER: NSB-2029-MW2

DATE OF INSTALLATION: 12/14/93



1. Height of Casing above ground: 0 feet

2. Depth to first Coupling: 1.5 feet

Coupling Interval Depths: 10 feet

3. Total Length of Riser Pipe: 1.5 feet

4. Type of Riser Pipe: 2" DIA SCH. 40 PVC

5. Length of Screen: 10 feet

6. Type of Screen: 2" DIA. SCH 40 PVC, 0.010" slot

7. Length of Sump: 0.5 feet

8. Total Depth of Boring: 12.00 feet

9. Diameter of Boring: 7 inches (nominal)

10. Depth to Bottom of Screen: 11.5 feet

11. Type of Screen Filter: Silica Sand

Quantity Used: 5 - 50 lb bags

Size: 20/30

12. Depth to Top of Filter: 1 feet

13. Type of Seal: Bentonite

Quantity Used: 7 lbs

14. Depth to Top of Seal: 0.5 feet

15. Type of Grout: Portland Type I

Grout Mixture: 5% Bentonite

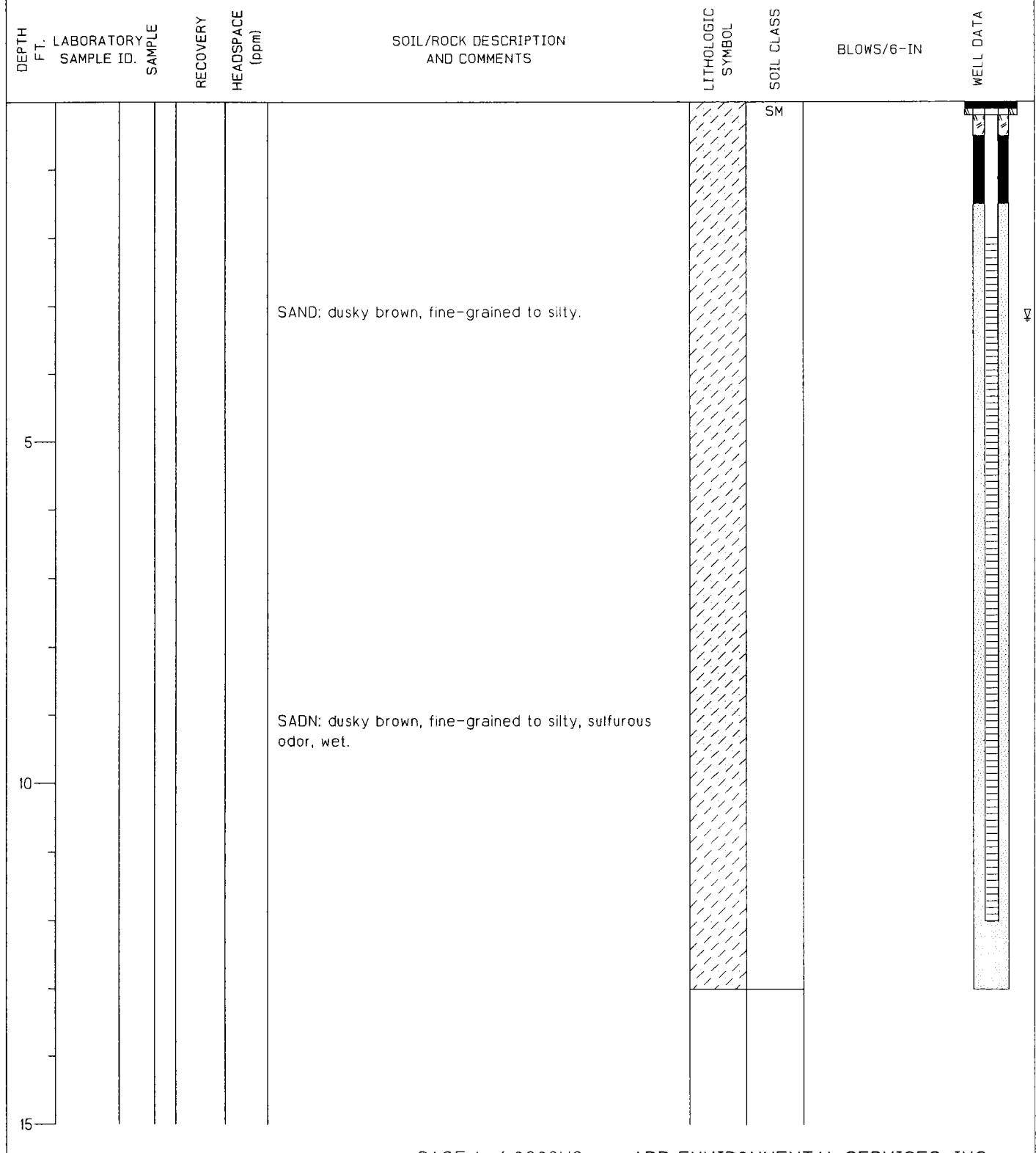
Method of Placement: Poured

16. Stabilizers: N/A

**COMMENTS ON INSTALLATION**

This well was completed with a flush-mount vault and pad.

TITLE: NSB Kings Bay		LOG of WELL: NSB-2029-MW3	BORING NO.
CLIENT: SOUTHNAVACENGCOM			PROJECT NO: 8515-30
CONTRACTOR: Ivey Drilling Company		DATE STARTED: 12/14/93	COMPLTD: 12/14/93
METHOD: 4.25" ID HSA	CASE SIZE: 2 inches	SCREEN INT.: 2-12'	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 12.46FT.	DPTH TO $\nabla$ 3.18 FT.
LOGGED BY: C. Jackson	WELL DEVELOPMENT DATE: 12/13/93		SITE: 2029



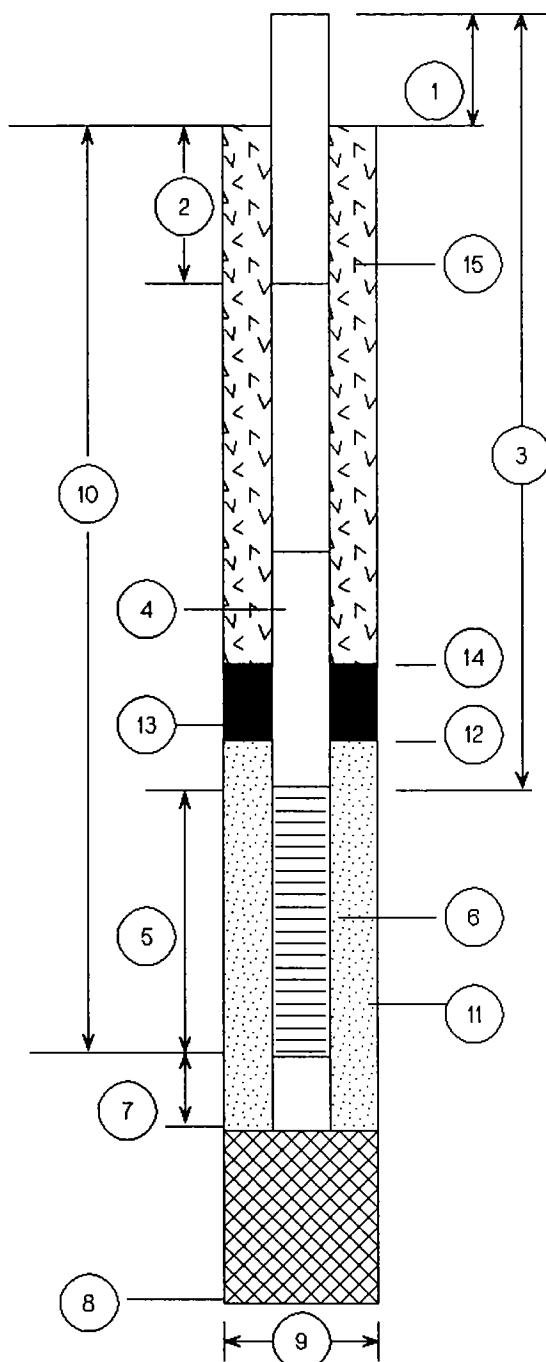
## NSB KINGS BAY

SITE 2029  
 DFM Storage Tank Facility  
 Kings Bay, Georgia

## WELL CONSTRUCTION DETAIL

WELL NUMBER: NSB-2029-MW3

DATE OF INSTALLATION: 12/14/93



1. Height of Casing above ground: 0 feet

2. Depth to first Coupling: 1.98 feet

Coupling Interval Depths: 10 feet

3. Total Length of Riser Pipe: 1.98 feet

4. Type of Riser Pipe: 2" DIA SCH. 40 PVC

5. Length of Screen: 10 feet

6. Type of Screen: 2" DIA. SCH 40 PVC, 0.010" slot

7. Length of Sump: 0.5 feet

8. Total Depth of Boring: 12.48 feet

9. Diameter of Boring: 7 inches (nominal)

10. Depth to Bottom of Screen: 11.98 feet

11. Type of Screen Filter: Silica Sand

Quantity Used: 8 - 50 lb bags Size: 20/30

12. Depth to Top of Filter: 1.5 feet

13. Type of Seal: Bentonite

Quantity Used: 15 lbs

14. Depth to Top of Seal: 0.5 feet

15. Type of Grout: Portland Type I

Grout Mixture: 5% Bentonite

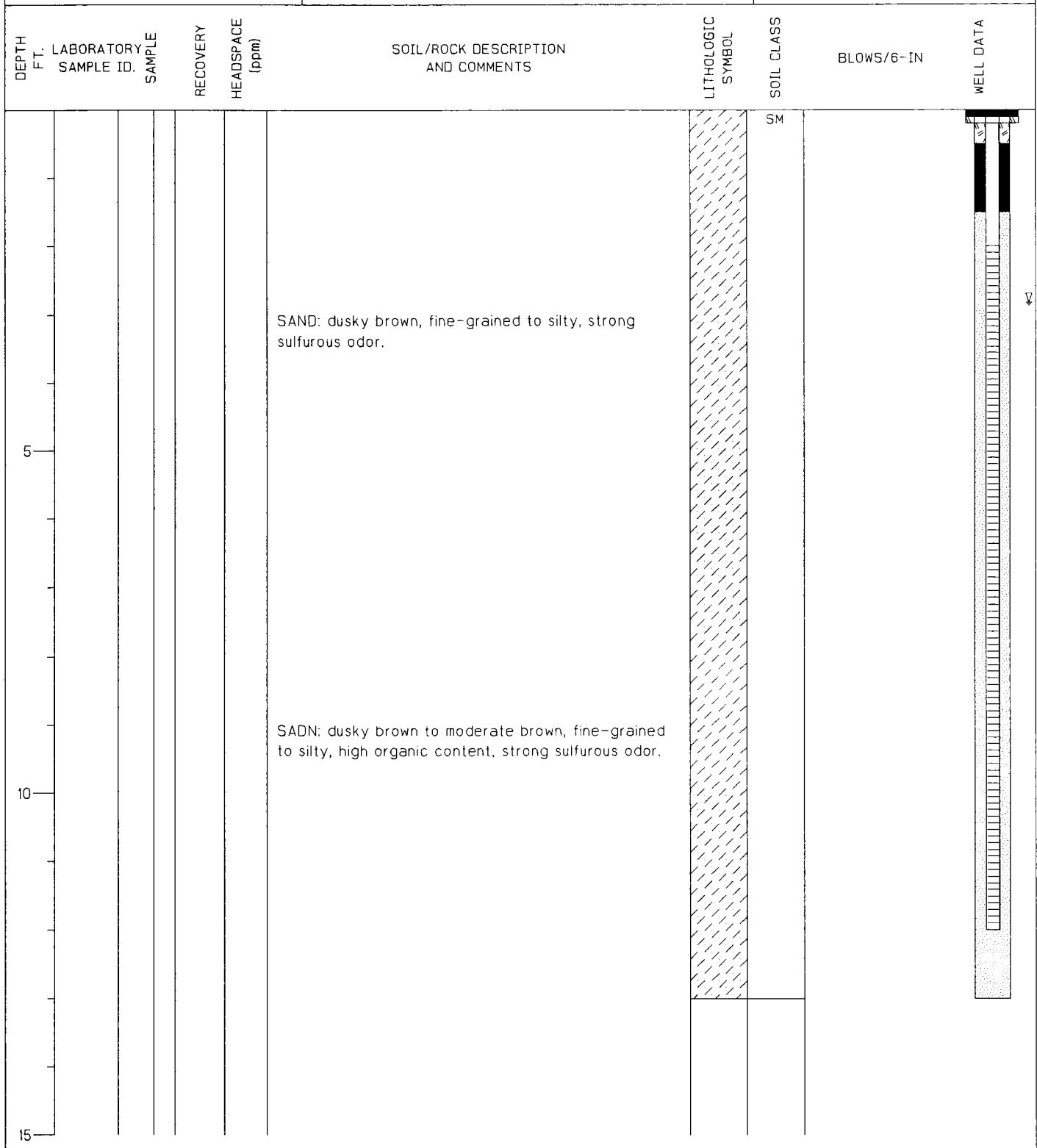
Method of Placement: Poured

16. Stabilizers: N/A

## COMMENTS ON INSTALLATION

This well was completed with a flush-mount vault and pad.

TITLE: NSB Kings Bay		LOG of WELL: NSB-2029-MW4	BORING NO.
CLIENT: SOUTHNAVACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: Ivey Drilling Company		DATE STARTED: 12/15/93	COMPLTD: 12/15/93
METHOD: 4.25" ID HSA	CASE SIZE: 2 inches	SCREEN INT.: 2-12'	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 12.53FT.	DPTH TO $\nabla$ 2.82 FT.
LOGGED BY: C. Jackson	WELL DEVELOPMENT DATE: 12/16/93	SITE: 2029	



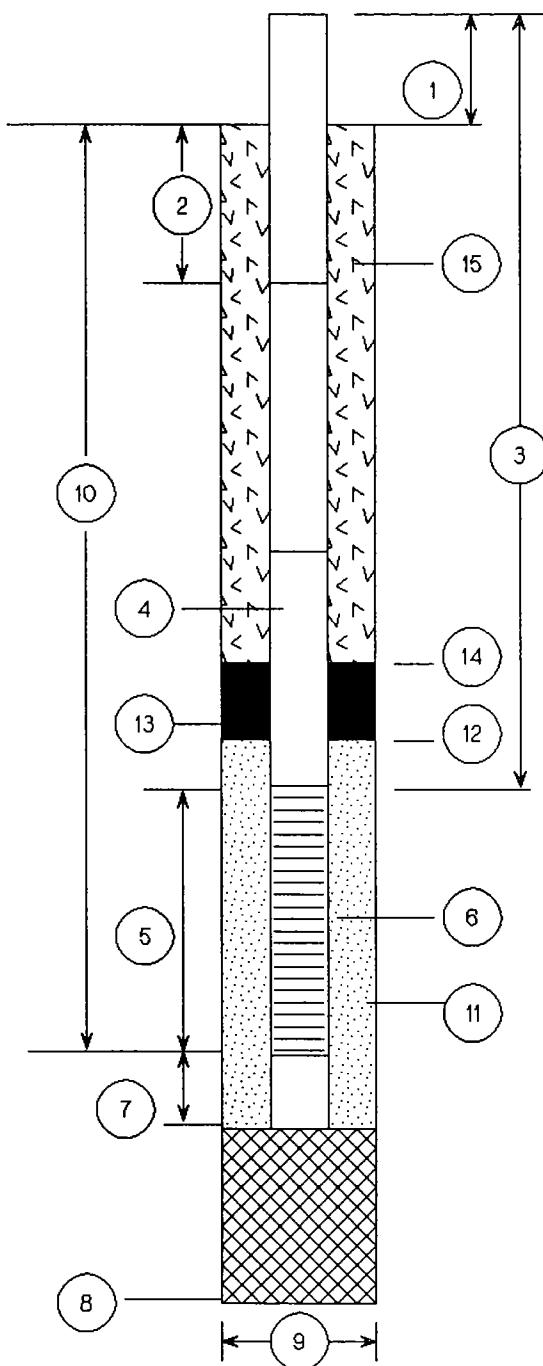
NSB KINGS BAY

SITE 2029  
DFM Storage Tank Facility  
Kings Bay, Georgia

WELL CONSTRUCTION DETAIL

WELL NUMBER: NSB-2029-MW4

DATE OF INSTALLATION: 12/15/93



1. Height of Casing above ground: 0 feet

2. Depth to first Coupling: 2.03 feet

Coupling Interval Depths: 10 feet

3. Total Length of Riser Pipe: 2.03 feet

4. Type of Riser Pipe: 2" DIA SCH. 40 PVC

5. Length of Screen: 10 feet

6. Type of Screen: 2" DIA. SCH 40 PVC, 0.010" slot

7. Length of Sump: 0.5 feet

8. Total Depth of Boring: 12.53 feet

9. Diameter of Boring: 7 inches (nominal)

10. Depth to Bottom of Screen: 12.03 feet

11. Type of Screen Filter: Silica Sand

Quantity Used: 8 - 50 lb bags

Size: 20/30

12. Depth to Top of Filter: 1.5 feet

13. Type of Seal: Bentonite

Quantity Used: 15 lbs

14. Depth to Top of Seal: 0.5 feet

15. Type of Grout: Portland Type I

Grout Mixture: 5% Bentonite

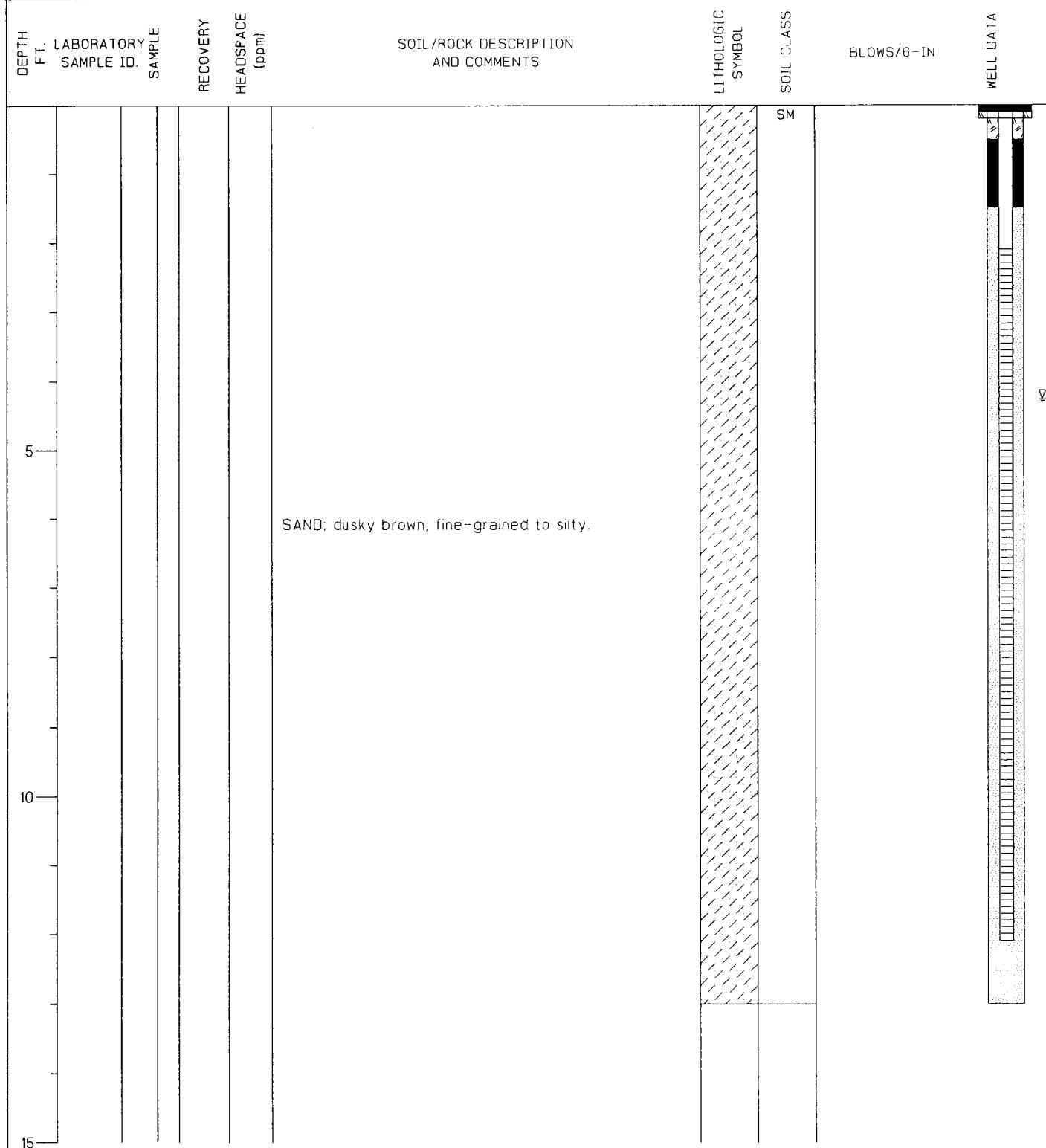
Method of Placement: Poured

16. Stabilizers: N/A

**COMMENTS ON INSTALLATION**

This well was completed with a flush-mount vault and pad.

TITLE: NSB Kings Bay		LOG of WELL: NSB-2029-MW5	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: Ivey Drilling Company		DATE STARTED: 12/15/93	COMPLTD: 12/15/93
METHOD: 4.25" ID HSA	CASE SIZE: 2 inches	SCREEN INT.: 2.1-12.1"	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 12.56FT.	DPTH TO $\nabla$ 4.27 FT.
LOGGED BY: C. Jackson	WELL DEVELOPMENT DATE: 12/16/93	SITE: 2029	

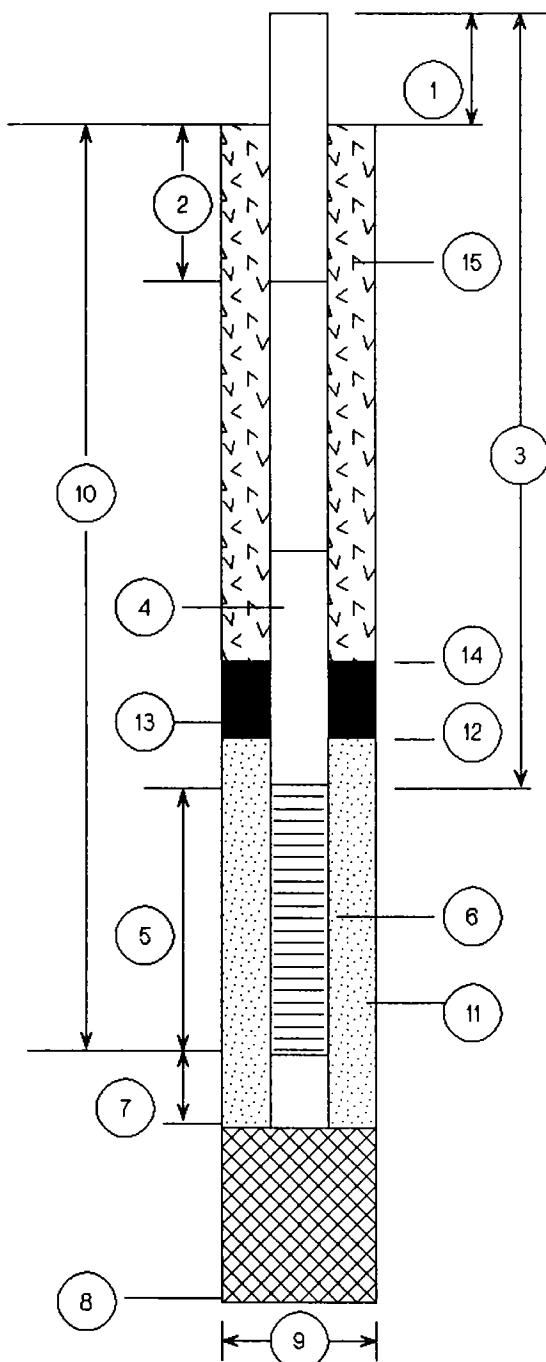


NSB KINGS BAY  
SITE 2029  
DFM Storage Tank Facility  
Kings Bay, Georgia

WELL CONSTRUCTION DETAIL

WELL NUMBER: NSB-2029-MW5

DATE OF INSTALLATION: 12/15/93



1. Height of Casing above ground: 0 feet

2. Depth to first Coupling: 2.08 feet

Coupling Interval Depths: 10 feet

3. Total Length of Riser Pipe: 2.08 feet

4. Type of Riser Pipe: 2" DIA SCH. 40 PVC

5. Length of Screen: 10 feet

6. Type of Screen: 2" DIA. SCH 40 PVC, 0.010" slot

7. Length of Sump: 0.5 feet

8. Total Depth of Boring: 12.58 feet

9. Diameter of Boring: 7 inches (nominal)

10. Depth to Bottom of Screen: 12.08 feet

11. Type of Screen Filter: Silica Sand

Quantity Used: 8 - 50 lb bags

Size: 20/30

12. Depth to Top of Filter: 1.5 feet

13. Type of Seal: Bentonite

Quantity Used: 15 lbs

14. Depth to Top of Seal: 0.5 feet

15. Type of Grout: Portland Type I

Grout Mixture: 5% Bentonite

Method of Placement: Poured

16. Stabilizers: N/A

COMMENTS ON INSTALLATION

This well was completed with a flush-mount vault and pad.

TITLE: NSB Kings Bay			LOG of WELL: NSB-2029-MW6		BORING NO.	
CLIENT: SOUTHNAVACENGCOM					PROJECT NO: 8515-30	
CONTRACTOR: Ivey Drilling Company			DATE STARTED: 12/15/93	COMPLTD: 12/15/93		
METHOD: 4.25" ID HSA		CASE SIZE: 2 inches	SCREEN INT.: 1.8-11.8'	PROTECTION LEVEL: D		
TOC ELEV.: FT.		MONITOR INST.: OVA	TOT DPTH: 12.25FT.	DPTH TO $\nabla$ 4.33 FT.		
LOGGED BY: C. Jackson		WELL DEVELOPMENT DATE: 12/16/93		SITE: 2029		
DEPTH F.T. SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS BLOWS/6-IN	WELL DATA
5			SAND: moderate brown to dusky brown, fine-grained to silty, sulfur odor.	/	SM	
10						
15						

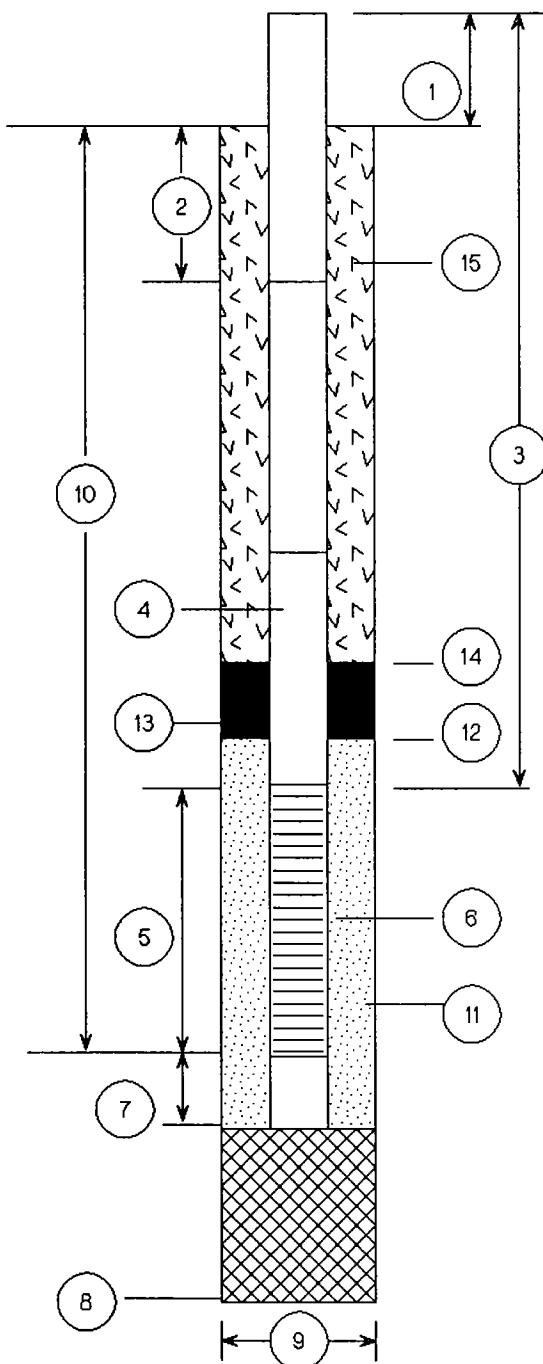
NSB KINGS BAY

SITE 2029  
DFM Storage Tank Facility  
Kings Bay, Georgia

WELL CONSTRUCTION DETAIL

WELL NUMBER: NSB-2029-MW6

DATE OF INSTALLATION: 12/15/93



1. Height of Casing above ground: 0 feet

2. Depth to first Coupling: 1.75 feet

Coupling Interval Depths: 10 feet

3. Total Length of Riser Pipe: 1.75 feet

4. Type of Riser Pipe: 2" DIA SCH. 40 PVC

5. Length of Screen: 10 feet

6. Type of Screen: 2" DIA. SCH 40 PVC, 0.010" slot

7. Length of Sump: 0.5 feet

8. Total Depth of Boring: 12.25 feet

9. Diameter of Boring: 7 inches (nominal)

10. Depth to Bottom of Screen: 11.75 feet

11. Type of Screen Filter: Silica Sand

Quantity Used: 8 - 50 lb bags Size: 20/30

12. Depth to Top of Filter: 1.5 feet

13. Type of Seal: Bentonite

Quantity Used: 15 lbs

14. Depth to Top of Seal: 0.5 feet

15. Type of Grout: Portland Type I

Grout Mixture: 5% Bentonite

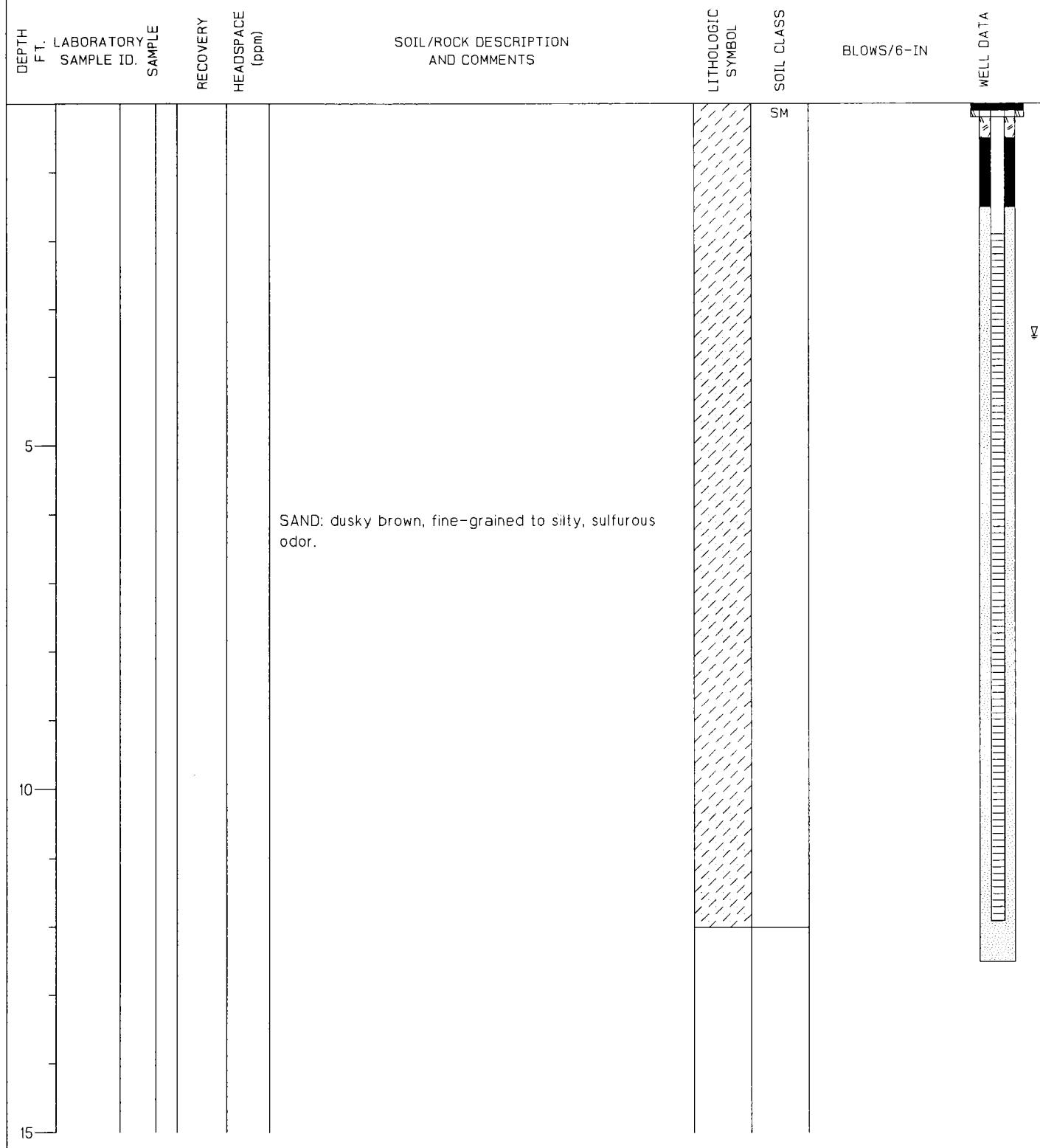
Method of Placement: Poured

16. Stabilizers: N/A

**COMMENTS ON INSTALLATION**

This well was completed with a flush-mount vault and pad.

TITLE: NSB Kings Bay		LOG of WELL: NSB-2029-MW7	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: Ivey Drilling Company		DATE STARTED: 12/15/93	COMPLTD: 12/15/93
METHOD: 4.25" ID HSA	CASE SIZE: 2 inches	SCREEN INT.: 1.9-11.9'	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 12.35FT.	DPTH TO $\nabla$ 3.40 FT.
LOGGED BY: C. Jackson	WELL DEVELOPMENT DATE: 12/16/93		SITE: 2029



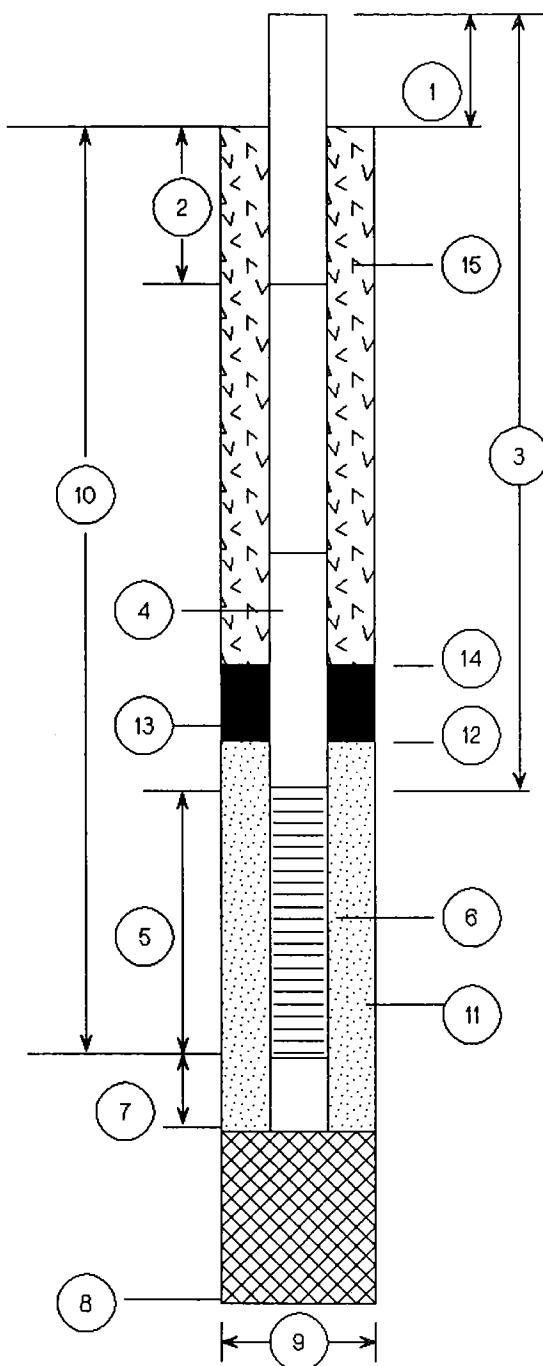
NSB KINGS BAY

SITE 2029  
DFM Storage Tank Facility  
Kings Bay, Georgia

WELL CONSTRUCTION DETAIL

WELL NUMBER: NSB-2029-MW7

DATE OF INSTALLATION: 12/15/93



1. Height of Casing above ground: 0 feet

2. Depth to first Coupling: 1.85 feet

Coupling Interval Depths: 10 feet

3. Total Length of Riser Pipe: 1.85 feet

4. Type of Riser Pipe: 2" DIA SCH. 40 PVC

5. Length of Screen: 10 feet

6. Type of Screen: 2" DIA. SCH 40 PVC, 0.010" slot

7. Length of Sump: 0.5 feet

8. Total Depth of Boring: 12.35 feet

9. Diameter of Boring: 7 inches (nominal)

10. Depth to Bottom of Screen: 11.85 feet

11. Type of Screen Filter: Silica Sand

Quantity Used: 8 - 50 lb bags

Size: 20/30

12. Depth to Top of Filter: 1.5 feet

13. Type of Seal: Bentonite

Quantity Used: 15 lbs

14. Depth to Top of Seal: 0.5 feet

15. Type of Grout: Portland Type I

Grout Mixture: 5% Bentonite

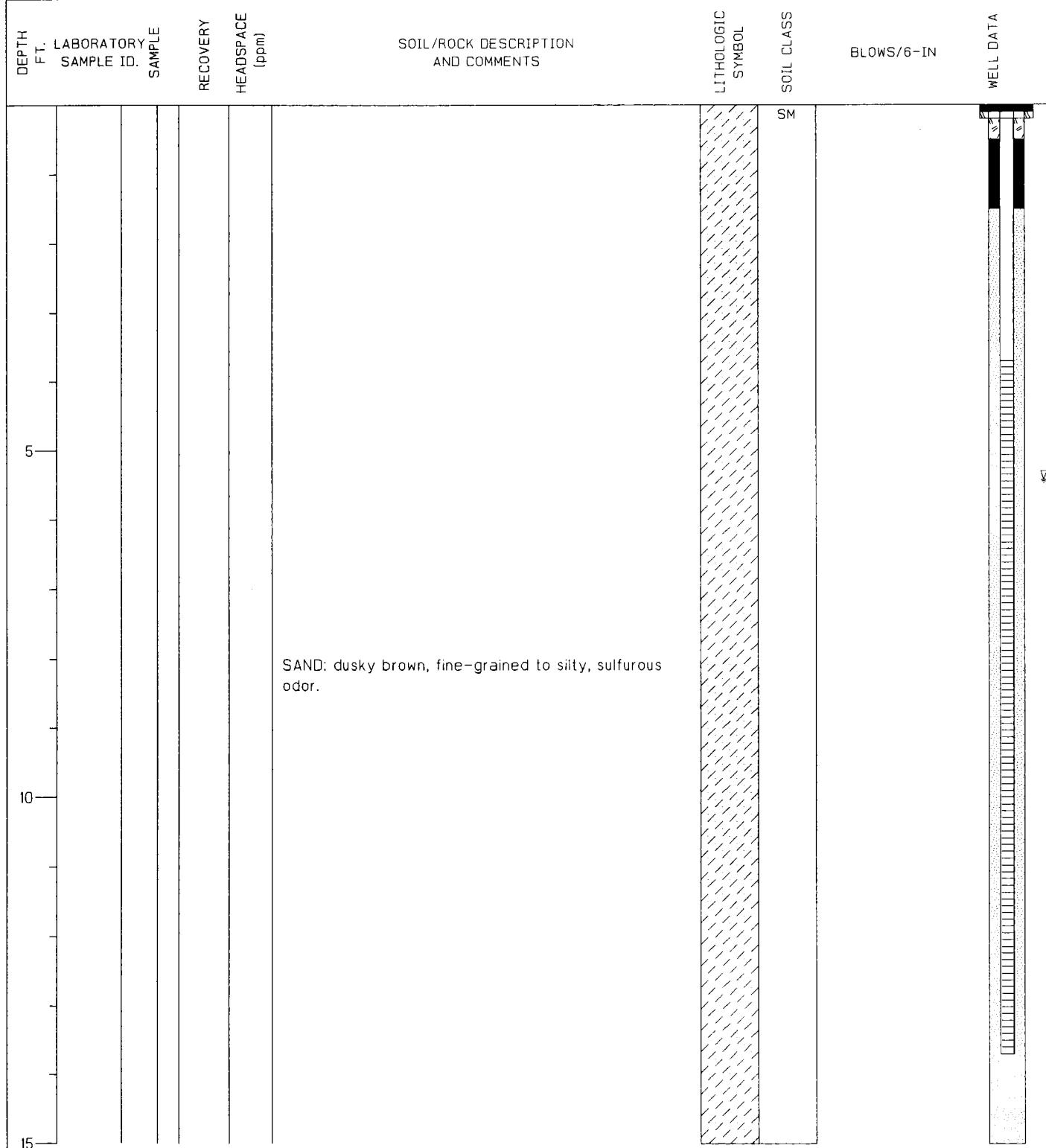
Method of Placement: Poured

16. Stabilizers: N/A

COMMENTS ON INSTALLATION

This well was completed with a flush-mount vault and pad.

TITLE: NSB Kings Bay		LOG of WELL: NSB-2029-MW8	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: Ivey Drilling Company		DATE STARTED: 12/15/93	COMPLTD: 12/15/93
METHOD: 4.25" ID HSA	CASE SIZE: 2 inches	SCREEN INT.: 3.7-13.7'	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 14.20FT.	DPTH TO V 5.43 FT.
LOGGED BY: C. Jackson	WELL DEVELOPMENT DATE: 12/16/93		SITE: 2029



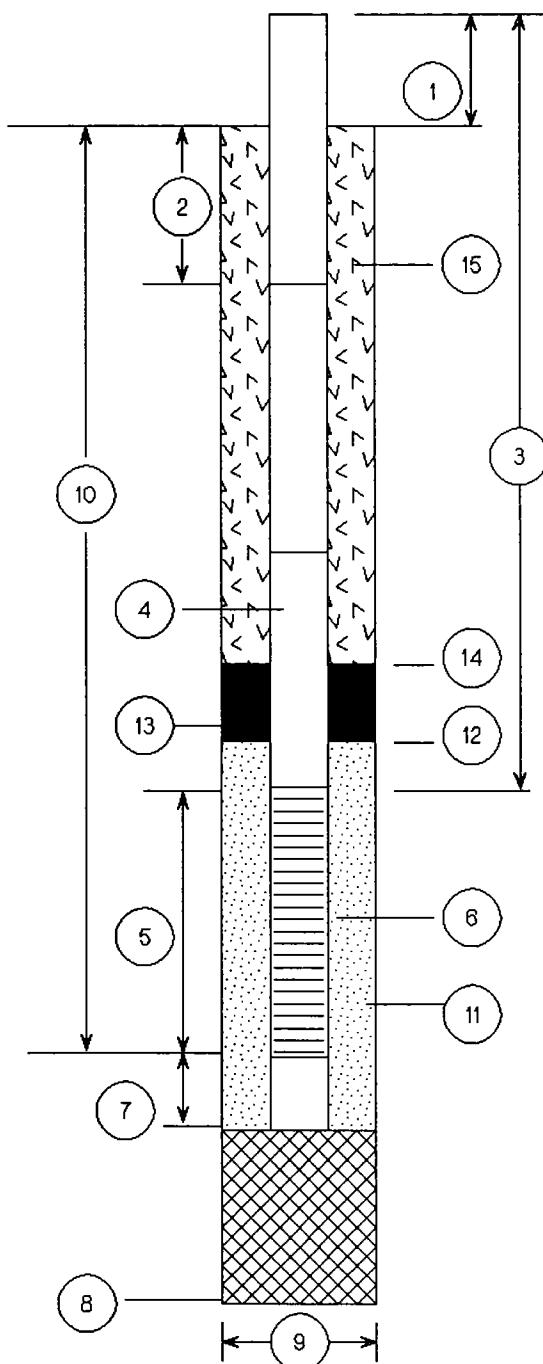
NSB KINGS BAY

SITE 2029  
DFM Storage Tank Facility  
Kings Bay, Georgia

WELL CONSTRUCTION DETAIL

WELL NUMBER: NSB-2029-MW8

DATE OF INSTALLATION: 12/15/93



1. Height of Casing above ground: 1.5 feet

2. Depth to first Coupling: 3.70 feet

Coupling Interval Depths: 10 feet

3. Total Length of Riser Pipe: 5.20 feet

4. Type of Riser Pipe: 2" DIA SCH. 40 PVC

5. Length of Screen: 10 feet

6. Type of Screen: 2" DIA. SCH 40 PVC, 0.010" slot

7. Length of Sump: 0.5 feet

8. Total Depth of Boring: 14.20 feet

9. Diameter of Boring: 7 inches (nominal)

10. Depth to Bottom of Screen: 13.70 feet

11. Type of Screen Filter: Silica Sand

Quantity Used: 7 - 50 lb bags

Size: 20/30

12. Depth to Top of Filter: 1.5 feet

13. Type of Seal: Bentonite

Quantity Used: 15 lbs

14. Depth to Top of Seal: 0.5 feet

15. Type of Grout: Portland Type I

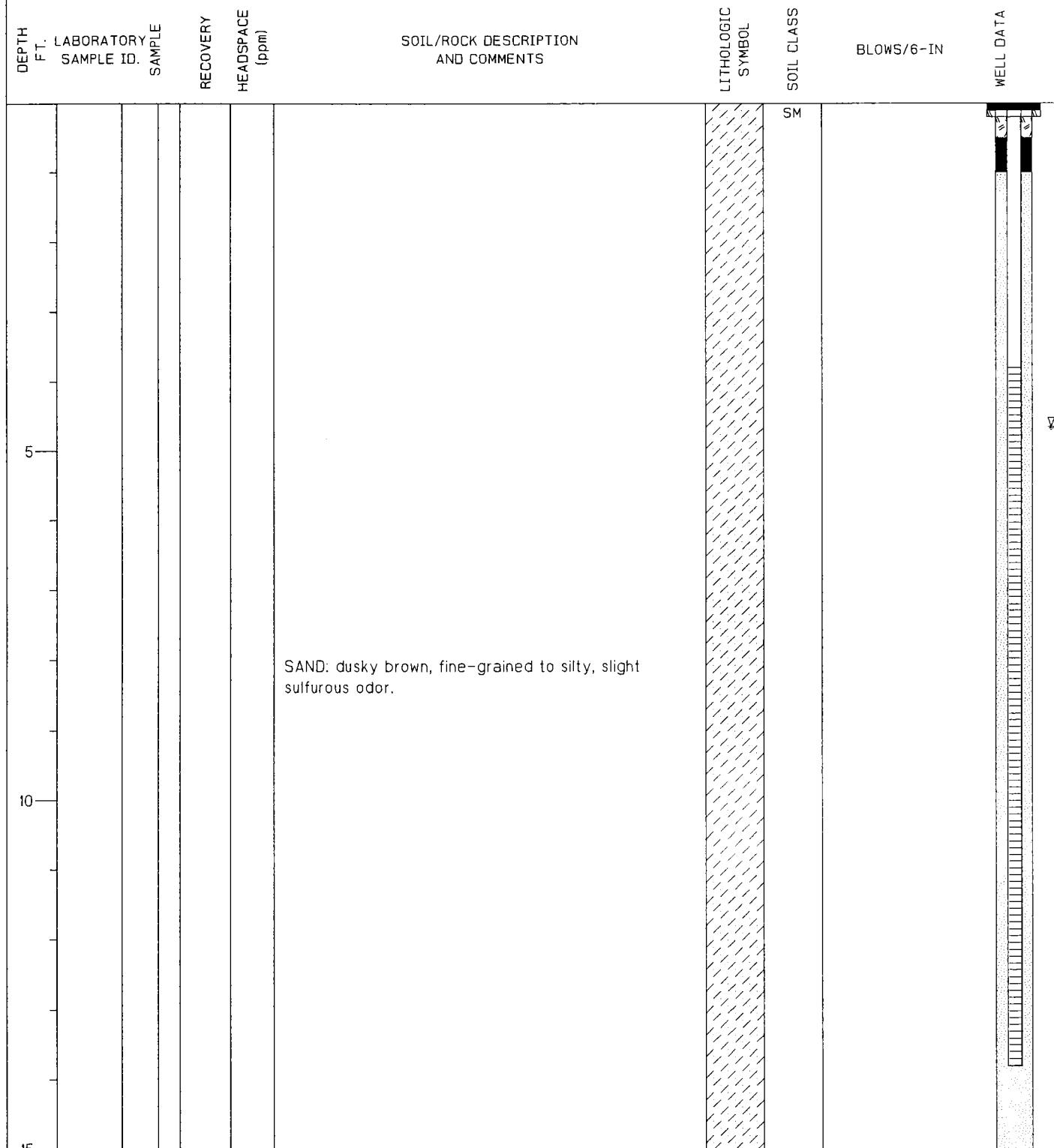
Grout Mixture: 5% Bentonite

Method of Placement: Poured

16. Stabilizers: N/A

COMMENTS ON INSTALLATION

TITLE: NSB Kings Bay		LOG of WELL: NSB-2029-MW9	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: Ivey Drilling Company		DATE STARTED: 12/15/93	COMPLTD: 12/15/93
METHOD: 4.25" ID HSA	CASE SIZE: 2 inches	SCREEN INT.: 3.8-13.8'	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 14.30FT.	DPTH TO $\nabla$ 4.65 FT.
LOGGED BY: C. Jackson	WELL DEVELOPMENT DATE: 12/16/93		SITE: 2029



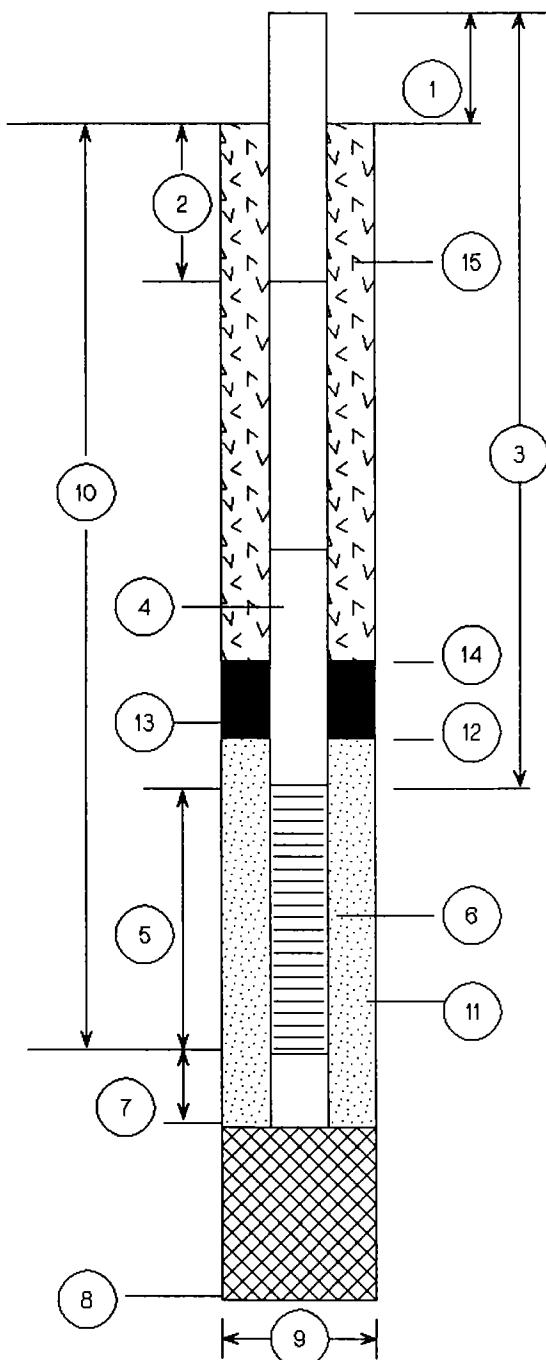
NSB KINGS BAY

SITE 2029  
DFM Storage Tank Facility  
Kings Bay, Georgia

## WELL CONSTRUCTION DETAIL

WELL NUMBER: NSB-2029-MW9

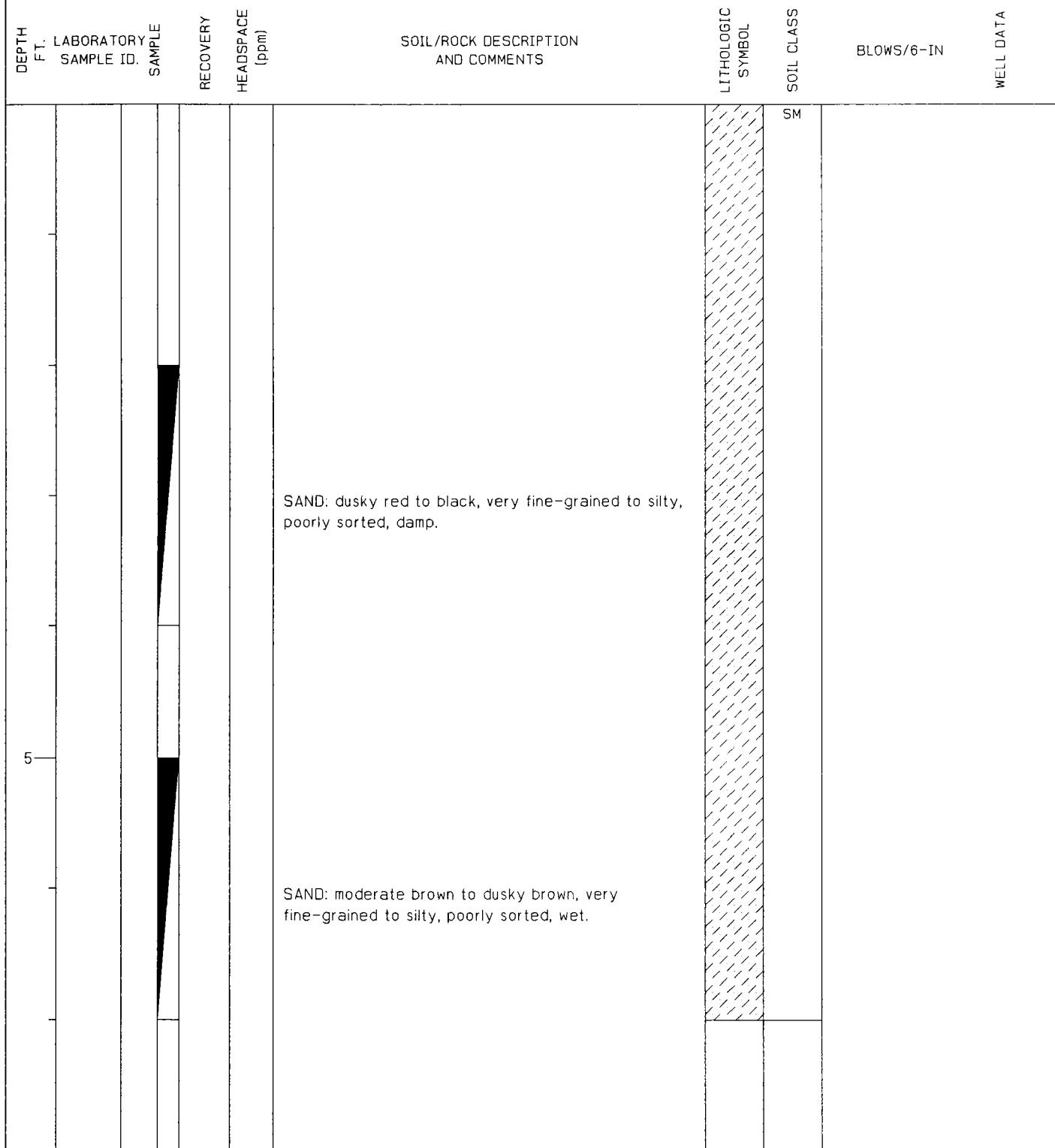
DATE OF INSTALLATION: 12/15/93



1. Height of Casing above ground: 1.5 feet  
2. Depth to first Coupling: 3.80 feet  
Coupling Interval Depths: 10 feet  
3. Total Length of Riser Pipe: 5.30 feet  
4. Type of Riser Pipe: 2" DIA SCH. 40 PVC  
5. Length of Screen: 10 feet  
6. Type of Screen: 2" DIA. SCH 40 PVC, 0.010" slot  
7. Length of Sump: 0.5 feet  
8. Total Depth of Boring: 14.30 feet  
9. Diameter of Boring: 7 inches (nominal)  
10. Depth to Bottom of Screen: 13.80 feet  
II. Type of Screen Filter: Silica Sand  
Quantity Used: 7 - 50 lb bags Size: 20/30  
12. Depth to Top of Filter: 1.0 feet  
13. Type of Seal: Bentonite  
Quantity Used: 7 lbs  
14. Depth to Top of Seal: 0.5 feet  
15. Type of Grout: Portland Type I  
Grout Mixture: 5% Bentonite  
Method of Placement: Poured  
16. Stabilizers: N/A

## COMMENTS ON INSTALLATION

TITLE: NSB Kings Bay		LOG of WELL:	BORING NO. 2029-SB1
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: 8515-30
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 12/01/93	COMPLTD: 12/01/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 7FT.	DPTH TO $\frac{1}{2}$ FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:		SITE: 2029



TITLE: NSB Kings Bay		LOG OF WELL:	BORING NO. 2029-SB2
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 12/01/93	COMPLTD: 12/01/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 4FT.	DPTH TO $\gamma$ FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:		SITE: 2029

DEPTH FT. LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5			SAND: moderate brown to black, very fine- to fine grained with some silt, moderately sorted, wet.	/	SM		

TITLE: NSB Kings Bay				LOG of WELL:		BORING NO. 2029-SB3			
CLIENT: SOUTHNAVACENGCOM				PROJECT NO: 8515-30					
CONTRACTOR: ABB Environmental Services, Inc.			DATE STARTED: 12/01/93		COMPLTD: 12/01/93				
METHOD: TerraProbe		CASE SIZE:		SCREEN INT.:		PROTECTION LEVEL: D			
TOC ELEV.: FT.		MONITOR INST.: OVA		TOT DPTH: 4FT.		DPTH TO $\frac{1}{2}$ FT.			
LOGGED BY: P. Wagner		WELL DEVELOPMENT DATE:			SITE: 2029				
DEPTH FT. SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS			LITHOLOGIC SYMBOL	SOIL CLASS BLOWS/6-IN	WELL DATA	
5			SAND: brownish black, very fine-grained to silty, poorly sorted, wet.			/\	SM		

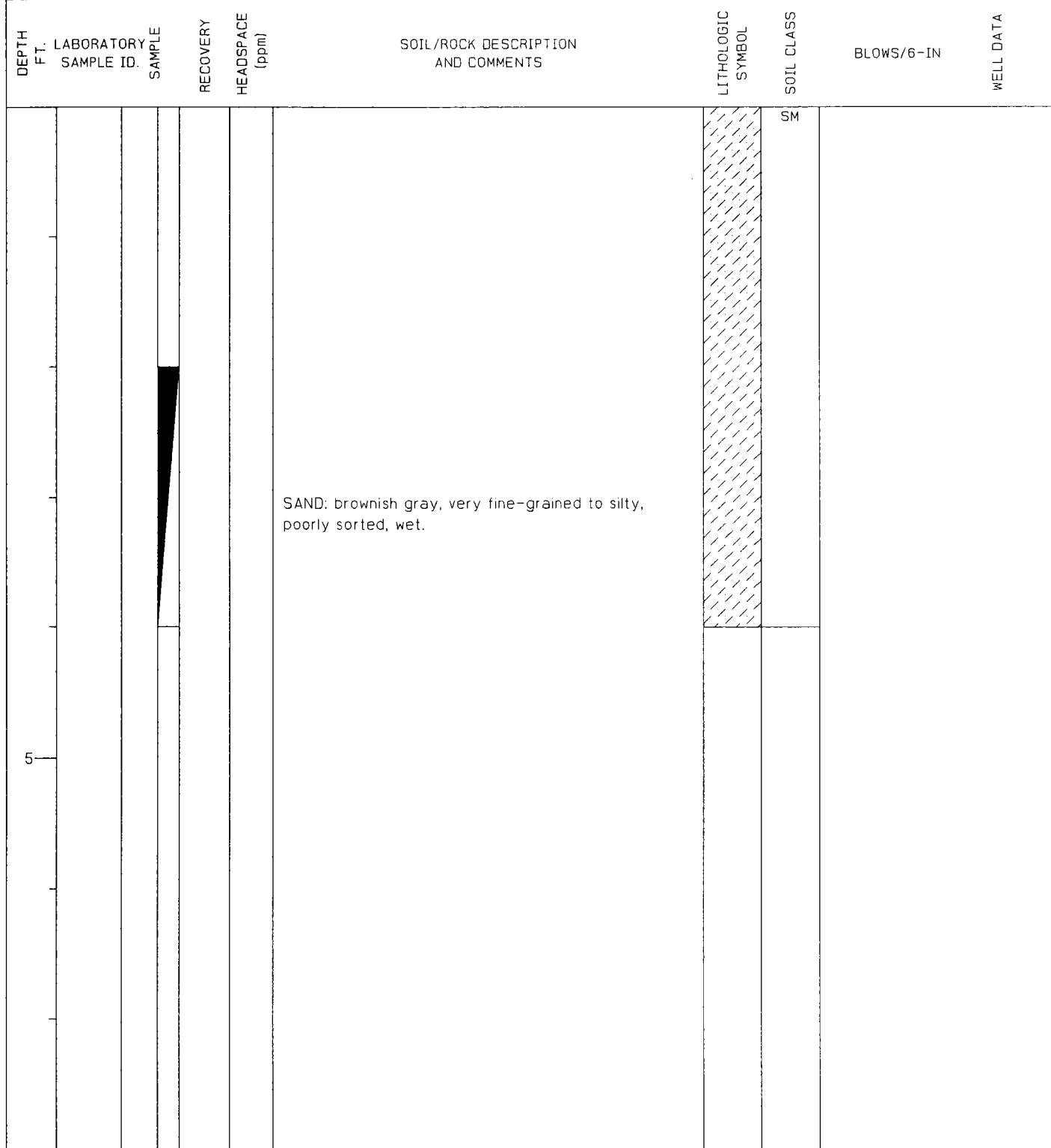
TITLE: NSB Kings Bay		LOG of WELL:	BORING NO. 2029-SB4
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: 8515-30
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 12/01/93	COMPLTD: 12/01/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 4FT.	DPTH TO $\frac{1}{2}$ FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:		SITE: 2029

DEPTH FT. LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5			SAND: moderate brown to black, fine-grained to silty, poorly sorted, wet.	/	SM		

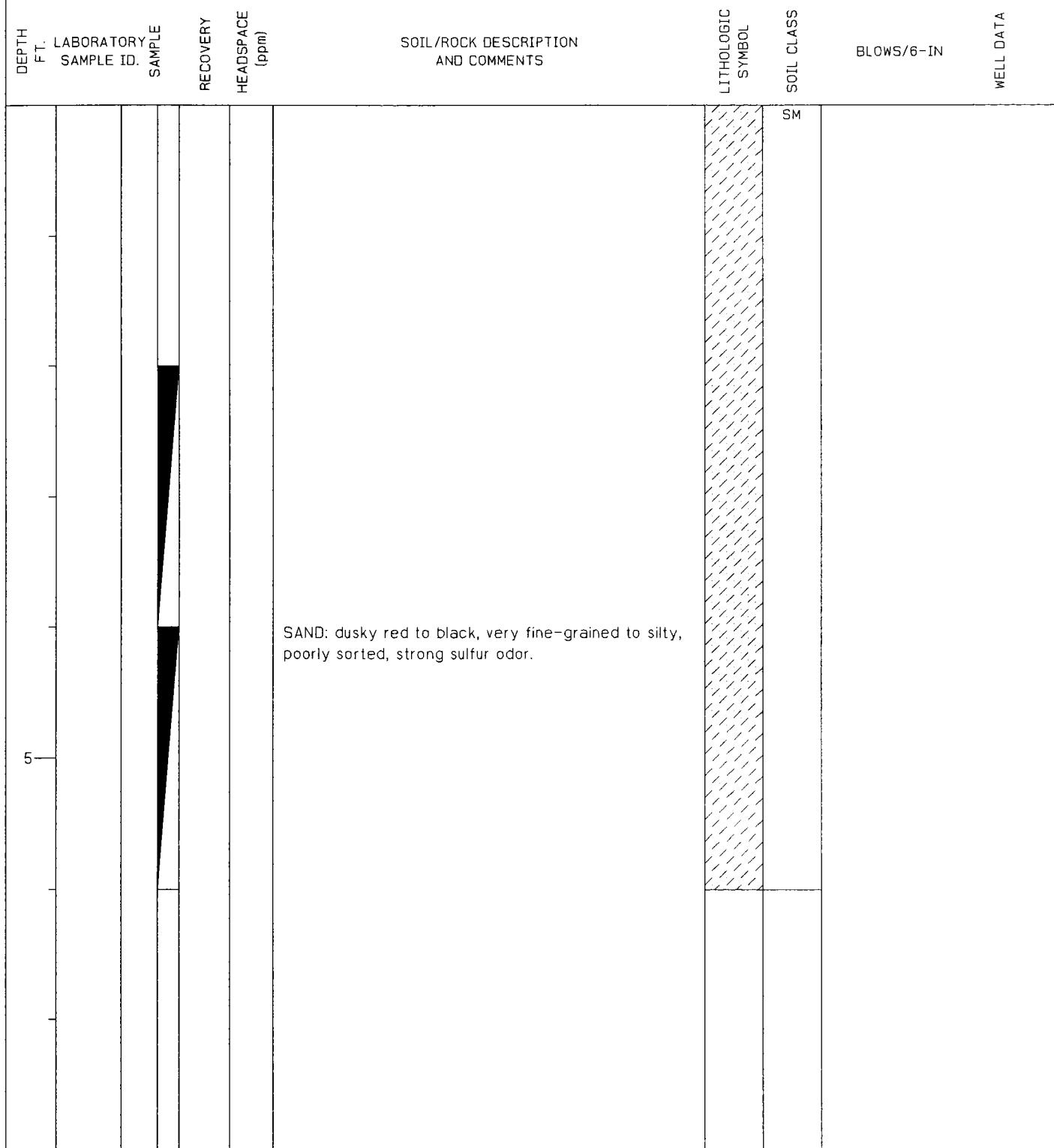
TITLE: NSB Kings Bay		LOG of WELL:	BORING NO. 2029-SB5
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 12/01/93	COMPLTD: 12/01/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 4FT.	DPTH TO $\frac{1}{2}$ FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:		SITE: 2029



TITLE: NSB Kings Bay		LOG of WELL:	BORING NO. 2029-SB6
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 12/01/93	COMPLTD: 12/01/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 4FT.	DPTH TO $\gamma$ FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:		SITE: 2029



TITLE: NSB Kings Bay		LOG of WELL:	BORING NO. 2029-SB7
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 12/01/93	COMPLTD: 12/01/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 6FT.	DPTH TO V FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:		SITE: 2029

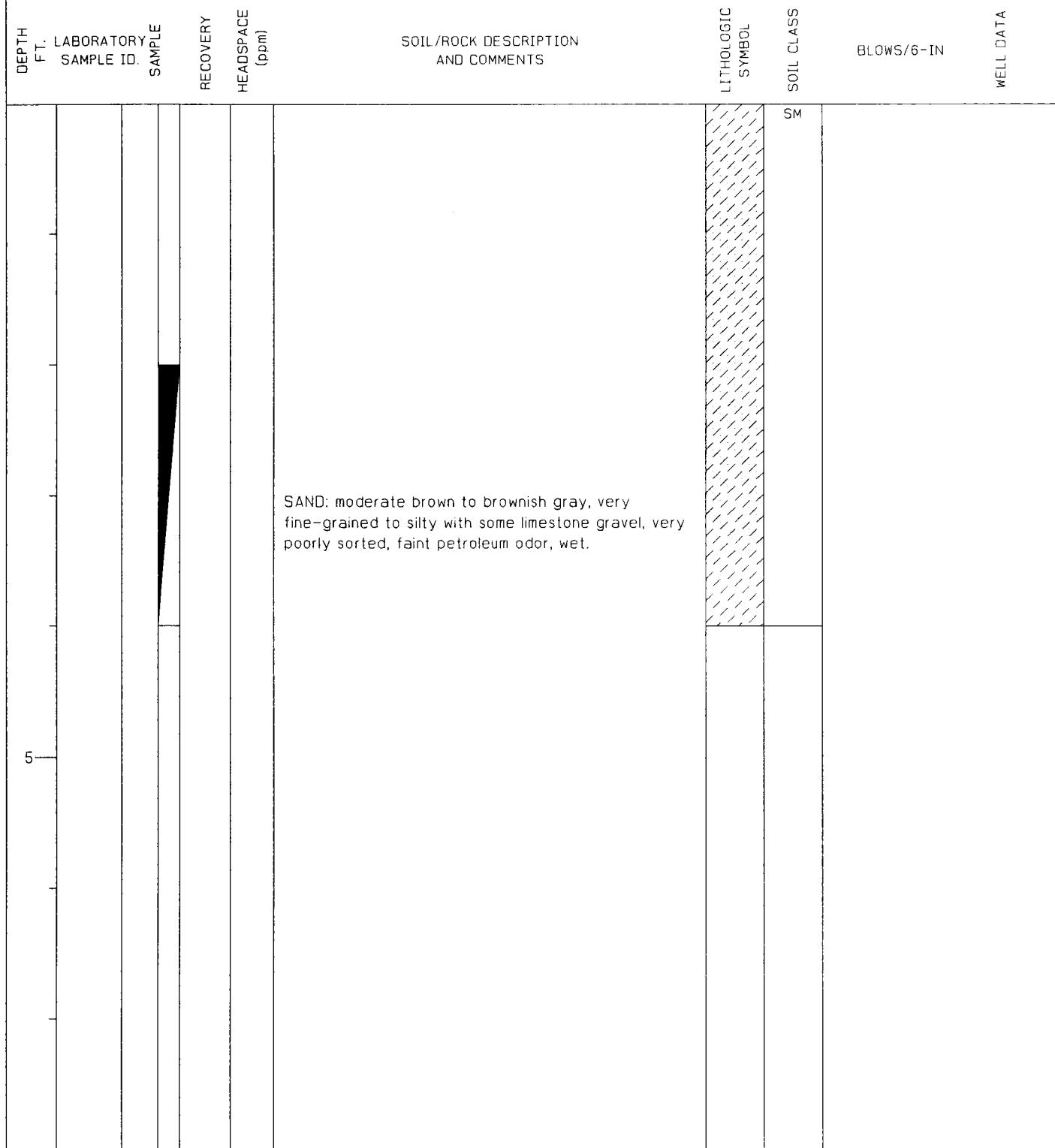


TITLE: NSB Kings Bay			LOG of WELL:		BORING NO. 2029-SB8			
CLIENT: SOUTHNAVFACENGCOM					PROJECT NO: 8515-30			
CONTRACTOR: ABB Environmental Services, Inc.			DATE STARTED: 12/02/93		COMPLTD: 12/02/93			
METHOD: TerraProbe	CASE SIZE:		SCREEN INT.:		PROTECTION LEVEL: D			
TOC ELEV.: FT.	MONITOR INST.: OVA		TOT DPTH: 6FT.		DPTH TO % FT.			
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:			SITE: 2029				
DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				SAND: moderate brown to brownish black, fine- to very fine-grained with some silt, micaceous, strong sulfur odor.	/ /	SM		

TITLE: NSB Kings Bay	LOG of WELL:	BORING NO. 2029-SB9
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30
CONTRACTOR: ABB Environmental Services, Inc.	DATE STARTED: 12/02/93	COMPLTD: 12/02/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.: PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 4FT. DPTH TO FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:	SITE: 2029

DEPTH F.T.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5					SAND: dusky brown to grayish brown, very fine-grained to silty, wet.	/	SM		

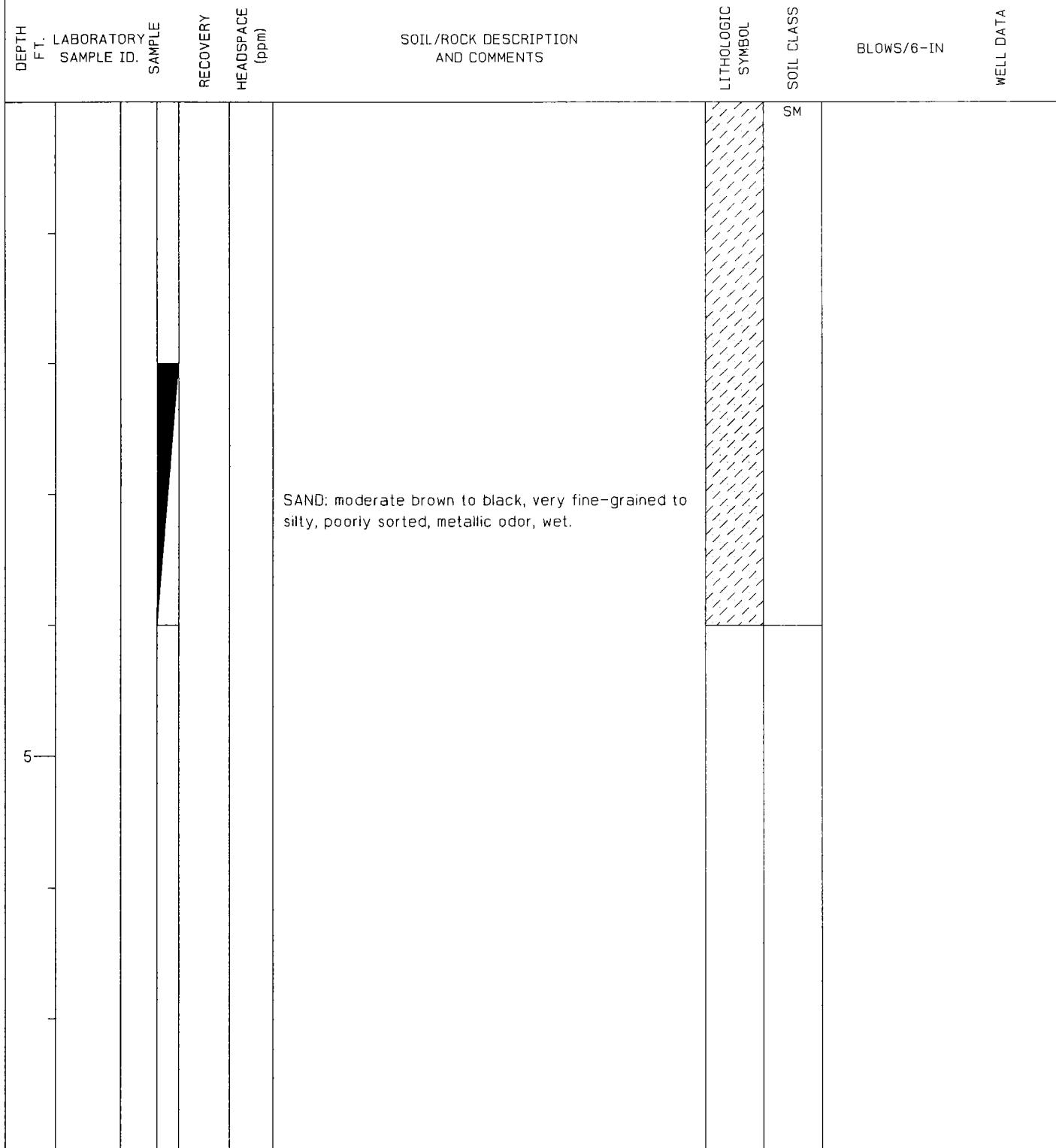
TITLE: NSB Kings Bay		LOG of WELL:	BORING NO. 2029-SB10
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 12/02/93	COMPLTD: 12/02/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 4FT.	DPTH TO $\frac{1}{2}$ FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:		SITE: 2029



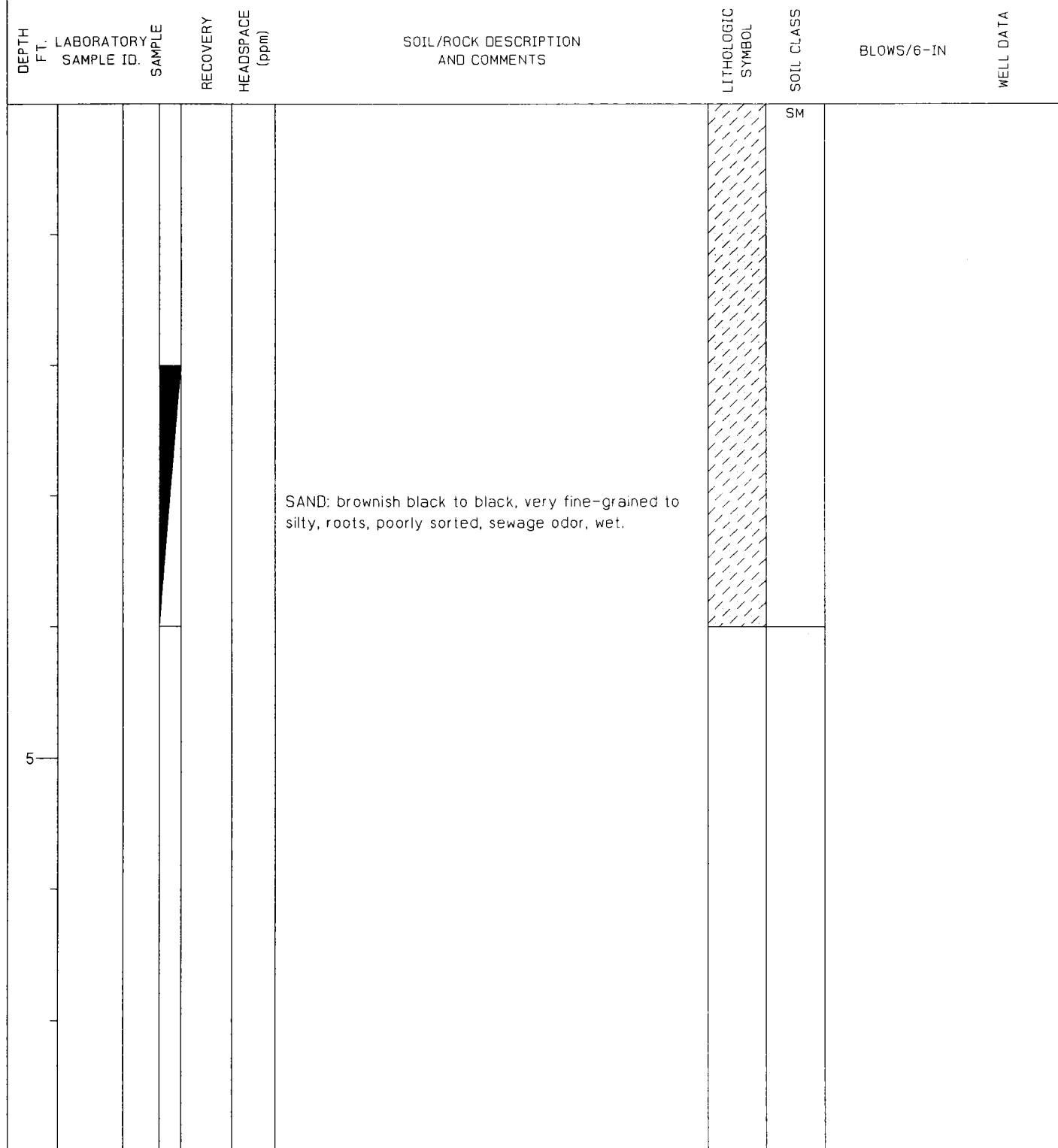
TITLE: NSB Kings Bay		LOG of WELL:	BORING NO. 2029-SB11
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: 8515-30
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 12/02/93	COMPLTD: 12/02/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 4FT.	DPTH TO $\frac{1}{2}$ FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:		SITE: 2029

DEPTH FT. LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5			SAND: brownish black to black, very fine-grained to silty with some limestone gravel, wet.	/	SM		

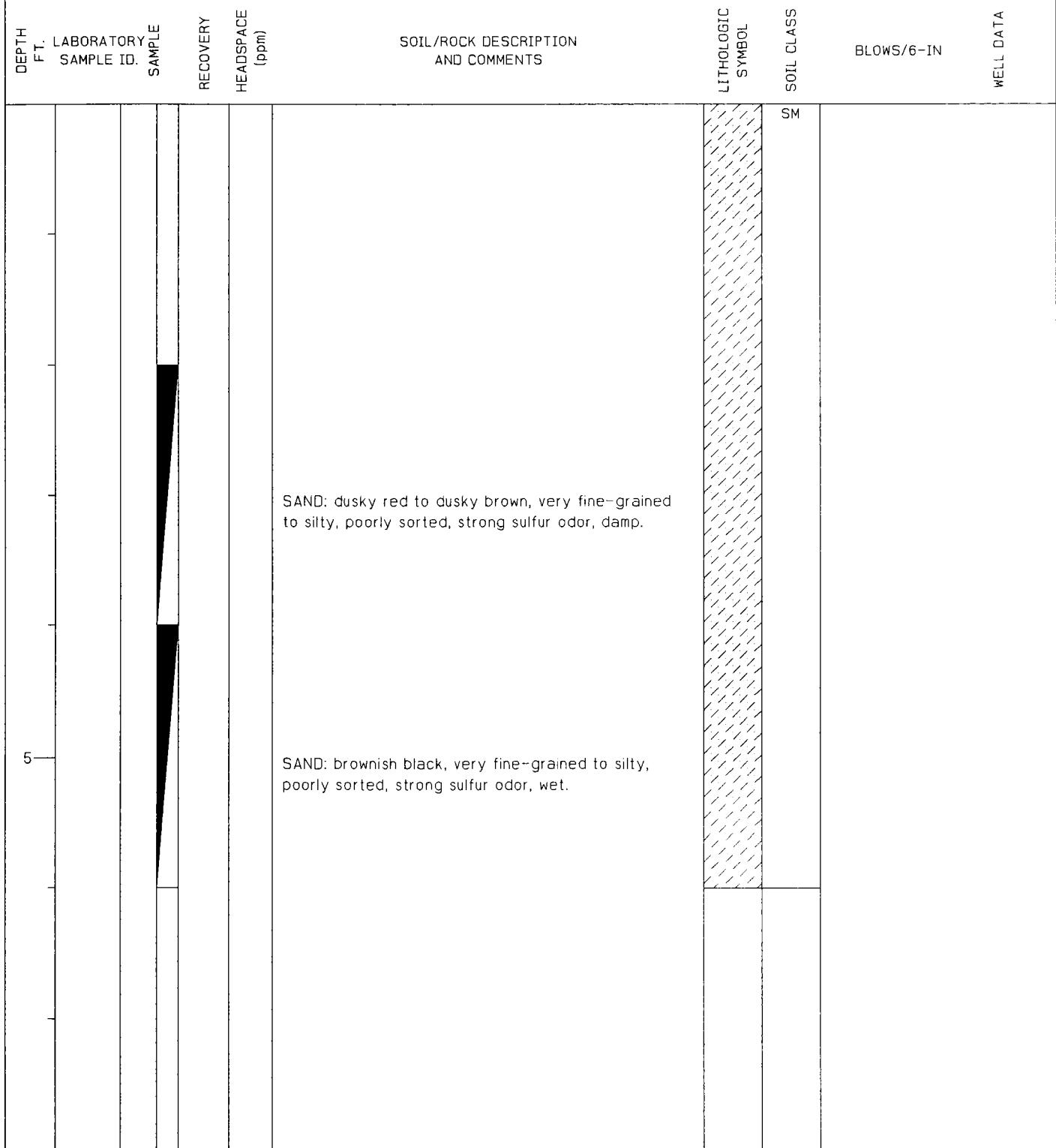
TITLE: NSB Kings Bay	LOG of WELL:	BORING NO. 2029-SB12
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30
CONTRACTOR: ABB Environmental Services, Inc.	DATE STARTED: 12/02/93	COMPLTD: 12/02/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 4FT. DPTH TO $\frac{1}{2}$ FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:	SITE: 2029



TITLE: NSB Kings Bay		LOG of WELL:	BORING NO. 2029-SB13
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 12/02/93	COMPLTD: 12/02/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 4FT.	DPTH TO $\frac{1}{2}$ FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:		SITE: 2029



TITLE: NSB Kings Bay		LOG of WELL:	BORING NO. 2029-SB14
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 8515-30	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 12/02/93	COMPLTD: 12/02/93
METHOD: TerraProbe	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 6FT.	DPTH TO $\frac{1}{2}$ FT.
LOGGED BY: P. Wagner	WELL DEVELOPMENT DATE:		SITE: 2029



**APPENDIX F**

**AQUIFER PARAMETER CALCULATIONS AND DATA**

## Aquifer Parameter Calculations

### Hydraulic Gradient

Water-table elevations were plotted on a map of the site. A water-table contour map was drawn with flow lines (depicting groundwater flow direction) perpendicular to the groundwater elevation contours. The average groundwater hydraulic gradient was calculated by subtracting the differences in groundwater elevation (in feet) between two points on the map and dividing the elevation difference by the distance between the two points to obtain a resulting gradient in feet per foot. Water elevation data collected on December 16, 1993, were used to calculate hydraulic gradients at the site. Two traverses were made perpendicular to equipotential contour lines to calculate an average site hydraulic gradient. For each traverse, the hydraulic gradient was calculated as follows:

$$i = \frac{(h_1 - h_2)}{d}$$

where

- i = hydraulic gradient (feet per foot [ft/ft]),
- $h_1$  = water-table elevation, upgradient (feet)
- $h_2$  = water-table elevation, downgradient (feet), and
- d = horizontal distance (feet) between  $h_1$  and  $h_2$  along a flow line.

Hydraulic gradients calculated in this manner varied from  $1.71 \times 10^{-3}$  ft/ft to  $1.3 \times 10^{-3}$  ft/ft. The average hydraulic gradient at the site was calculated to be  $1.5 \times 10^{-3}$  ft/ft.

### Hydraulic Conductivity

Hydraulic conductivity from slug test data was calculated following the methods of Bouwer and Rice (1976) and Bouwer (1989) for partially penetrating wells screened in unconfined aquifers. The following well information was needed to assess the hydraulic conductivity:

- radius of well casing ( $r_c$ ),
- $r_w$  = radius of borehole ( $r_c$  plus radius of the sand pack surrounding the well screen ),
- length of screened interval below the water table ( $L_e$ ),
- effective well radius ( $r_e$ ),
- depth of well below the water table ( $L_w$ ),
- depth to confining unit or bottom of aquifer below the static water table (H), and
- plot of time versus the logarithm of y, where y is the difference between the static water level outside the well and the water level inside the well.

Appendix A, Figure 15 is a well diagram depicting most of the aquifer and well parameters. Calculations were made assuming that  $L_w < H$ . Hydraulic conductivity, K, was calculated as follows:

$$K = [R_c^2 \ln(\frac{r_e}{r_w}) - 2L_e] [\frac{1}{t} \ln(\frac{y_o}{y_t})]$$

where

$y_o$  = y at time zero, and  
 $y_t$  = y at time t.

The effective well radius,  $r_e$ , and the term  $[(1/t)\ln(y_o/y_t)]$  were derived by using the computer program AQTESOLV™ (Geraghty & Miller, Inc., 1989). This computer program follows procedures and assumptions outlined by Bouwer (1989).

Slug test graphs and a summary table are attached at the end of this section. Values of y were calculated for a particular time, t, and plotted on the graph. The computer program selects a "best-fit" line through the data points by linear regression along a "straight-line" portion of the graph. The slope of the "best-fit" line is used to calculate the hydraulic conductivity, K.

Three slug tests were performed inside wells NSB-3022-MW3 and four tests were performed inside well NSB-3022-MW9. Hydraulic conductivity, K, is reported in feet per minute (ft/min) on the slug test graphs, and was recalculated to feet per day (ft/day). K was found to vary from 2.06 ft/day to 6.13 ft/day with an average K of 4.16 ft/day.

#### Average Pore Water Velocity

Estimates of average pore water velocity were obtained using the following formula:

$$V = \frac{(K * i)}{n}$$

where

V = seepage velocity in ft/day  
 K = hydraulic conductivity in ft/day  
 i = hydraulic gradient, and  
 n = estimated porosity.

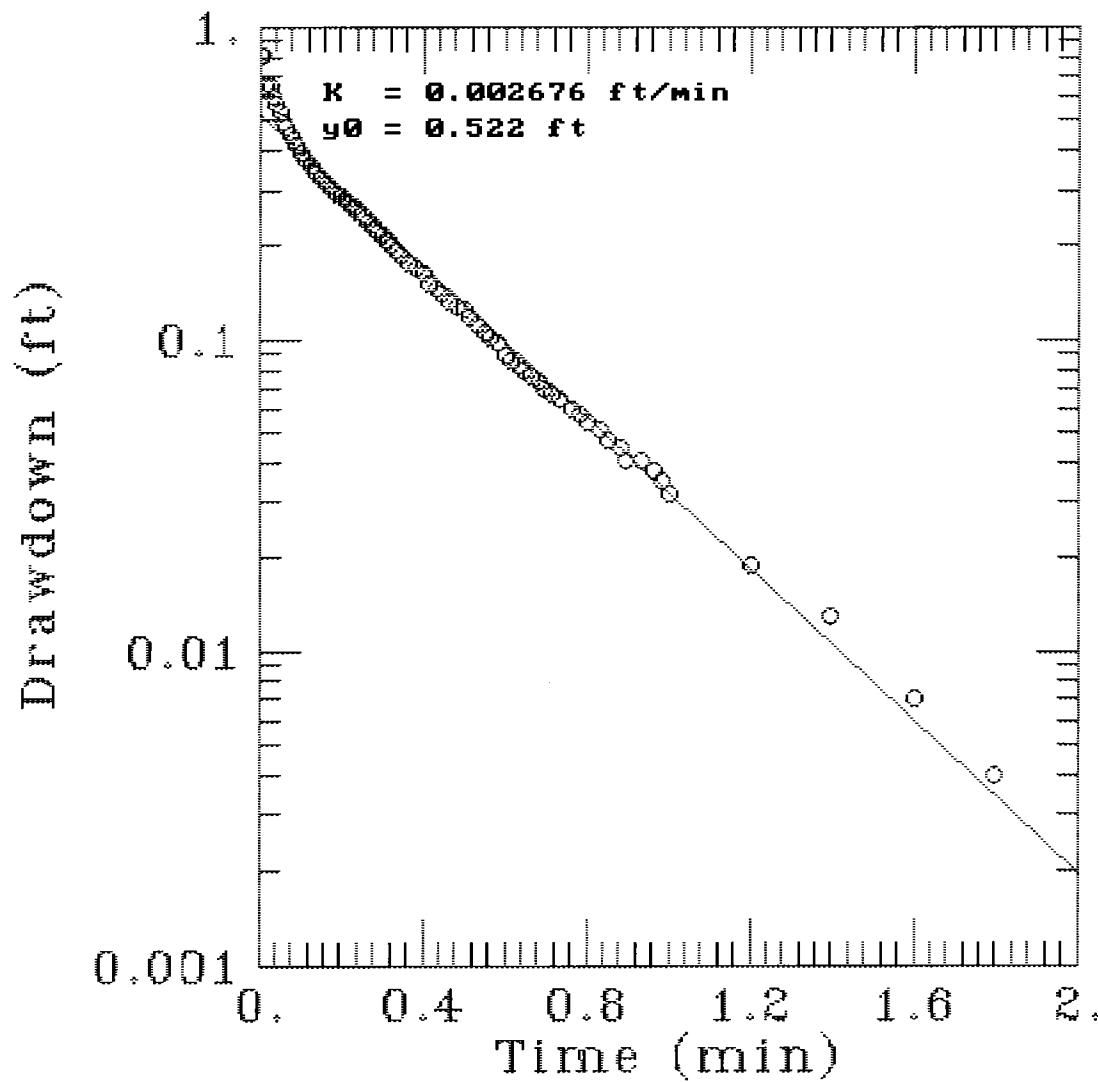
Assuming an estimated porosity of 25 percent, an average hydraulic gradient of  $1.5 \times 10^{-3}$  ft/ft, and an average hydraulic conductivity of 4.16 ft/day, the average pore water velocity is calculated as follows:

$$V = \frac{1.5 \times 10^{-3} \text{ ft/ft} \times 4.16 \text{ ft/day}}{0.25}$$

$$V = 2.50 \times 10^{-2} \text{ ft/day}$$

## **SLUG TEST PLOTS**

# NSB 2029 MW3 RUN#1



AQTESOLV  
GERAGHTY  
& MILLER, INC.  
Modeling Group

A Q T E S O L V      R E S U L T S  
Version 1.10

05/05/94

13:31:40

#### TEST DESCRIPTION

Data set..... A:20293R1.SET  
Data set title.... NSB 2029 MW3 RUN#1

#### Knowns and Constants:

No. of data points.....	79
Radius of well casing.....	0.083
Radius of well.....	0.26
Aquifer saturated thickness.....	10
Well screen length.....	10
Static height of water in well.....	10
Log(Re/Rw) .....	2.78
A, B, C.....	0.000, 0.000, 2.245

## **ANALYTICAL METHOD**

## Bouwer-Rice (Unconfined Aquifer Slug Test)

## RESULTS FROM VISUAL CURVE MATCHING

## VISUAL MATCH PARAMETER ESTIMATES

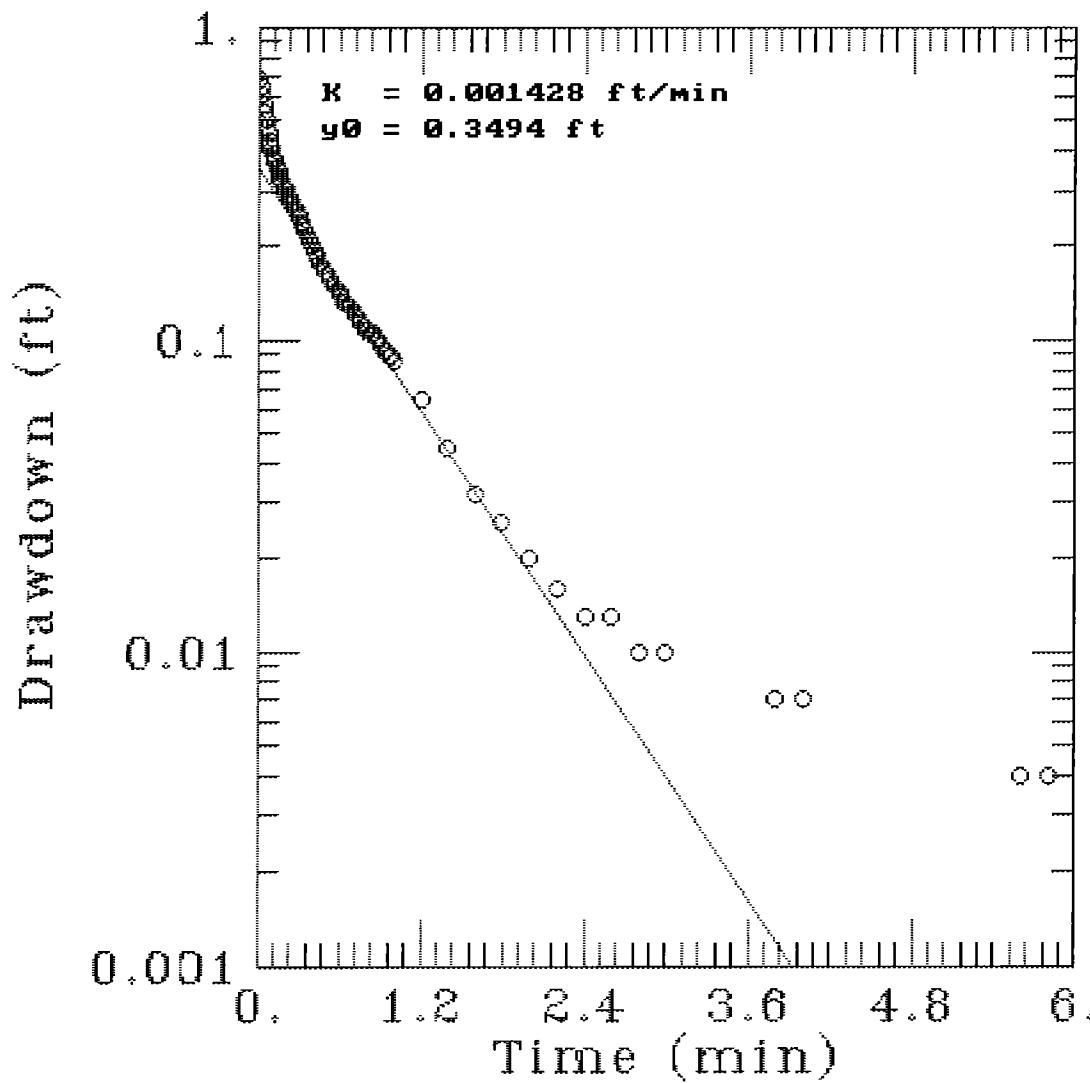
	Estimate
K =	2.6758E-003
y0 =	1.9302E+053

## TYPE CURVE DATA

K = 2.67584E-003  
y0 = 5.21996E-001

Time	Drawdown	Time	Drawdown	Time	Drawdown
0.000E+000	5.220E-001	2.000E+000	1.950E-003		

# NSB 2029 MW3 RUN#2



AQTESOLV  
GERAGHTY  
& MILLER, INC.  
Modeling Group

# A Q T E S O L V      R E S U L T S

Version 1.10

05/05/94

11:25:28

## TEST DESCRIPTION

Data set..... A:20293R2.SET  
Data set title.... NSB 2029 MW3 RUN#2

#### Knowns and Constants:

No. of data points.....	94
Radius of well casing.....	0.083
Radius of well.....	0.26
Aquifer saturated thickness.....	10
Well screen length.....	10
Static height of water in well.....	10
Log(Re/Rw).....	2.78
A, B, C.....	0.000, 0.000, 2.245

## **ANALYTICAL METHOD**

## Bouwer-Rice (Unconfined Aquifer Slug Test)

## RESULTS FROM VISUAL CURVE MATCHING

## VISUAL MATCH PARAMETER ESTIMATES

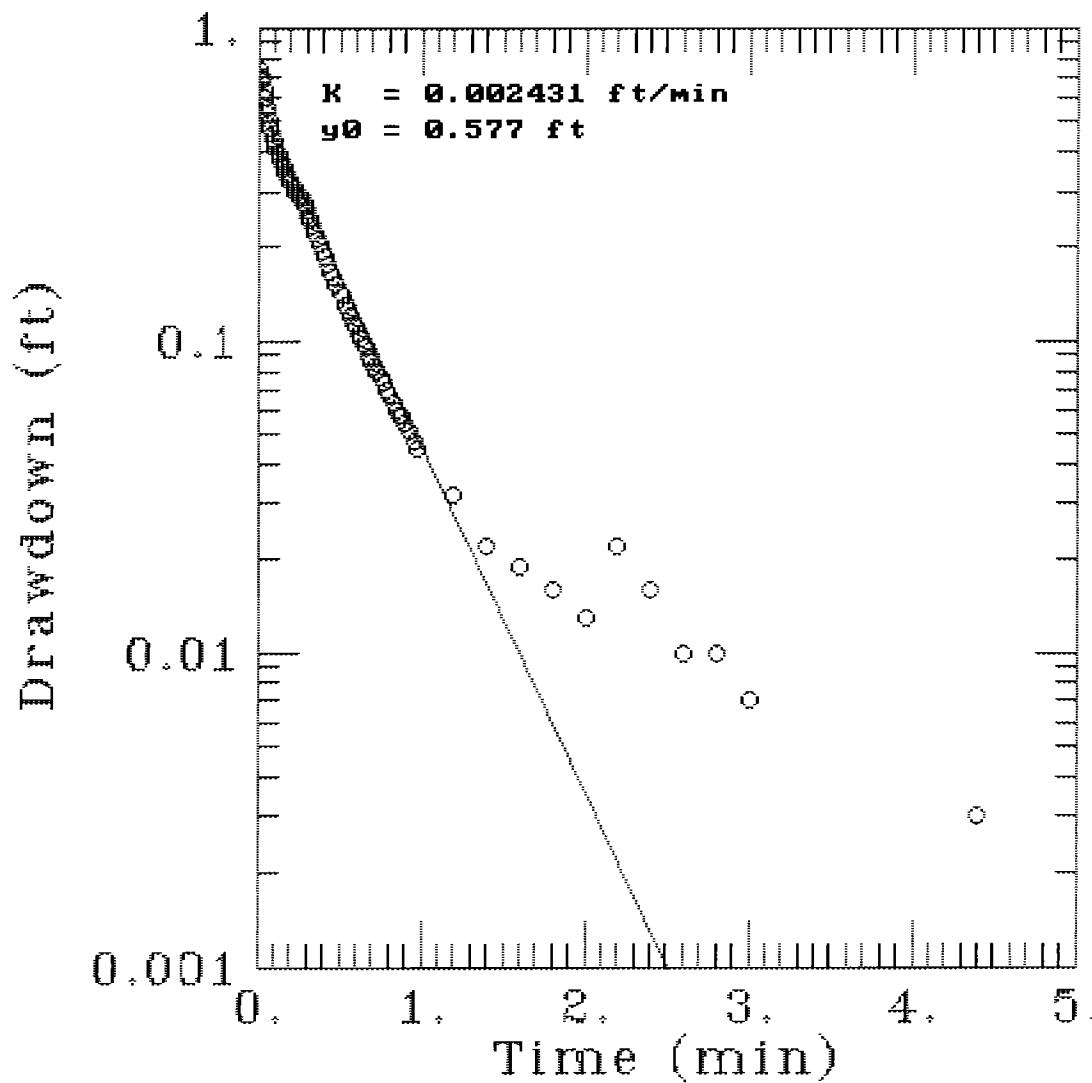
	Estimate
K =	9.7431E-004
y0 =	3.1430E-294

TYPE CURVE DATA

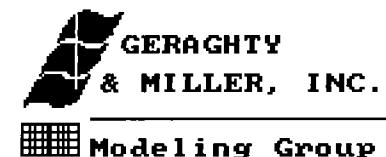
K = 1.42770E-003  
y0 = 3.49379E-001

Time	Drawdown	Time	Drawdown	Time	Drawdown
0.000E+000	3.494E-001	6.000E+000	4.546E-005		

# NSB 2029 MW3 RUN#3



AQTESOLV



# A Q T E S O L V      R E S U L T S

Version 1.10

05/05/94

12:35:17

## TEST DESCRIPTION

Data set..... A:20293R3.SET  
Data set title.... NSB 2029 MW3 RUN#3

#### Knowns and Constants:

No. of data points.....	87
Radius of well casing.....	0.083
Radius of well.....	0.26
Aquifer saturated thickness.....	10
Well screen length.....	10
Static height of water in well.....	10
Log(Re/Rw) .....	2.78
A, B, C.....	0.000, 0.000, 2.245

## **ANALYTICAL METHOD**

## Bouwer-Rice (Unconfined Aquifer Slug Test)

## RESULTS FROM VISUAL CURVE MATCHING

## VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.3933E-003
y0 =	1.9302E+053

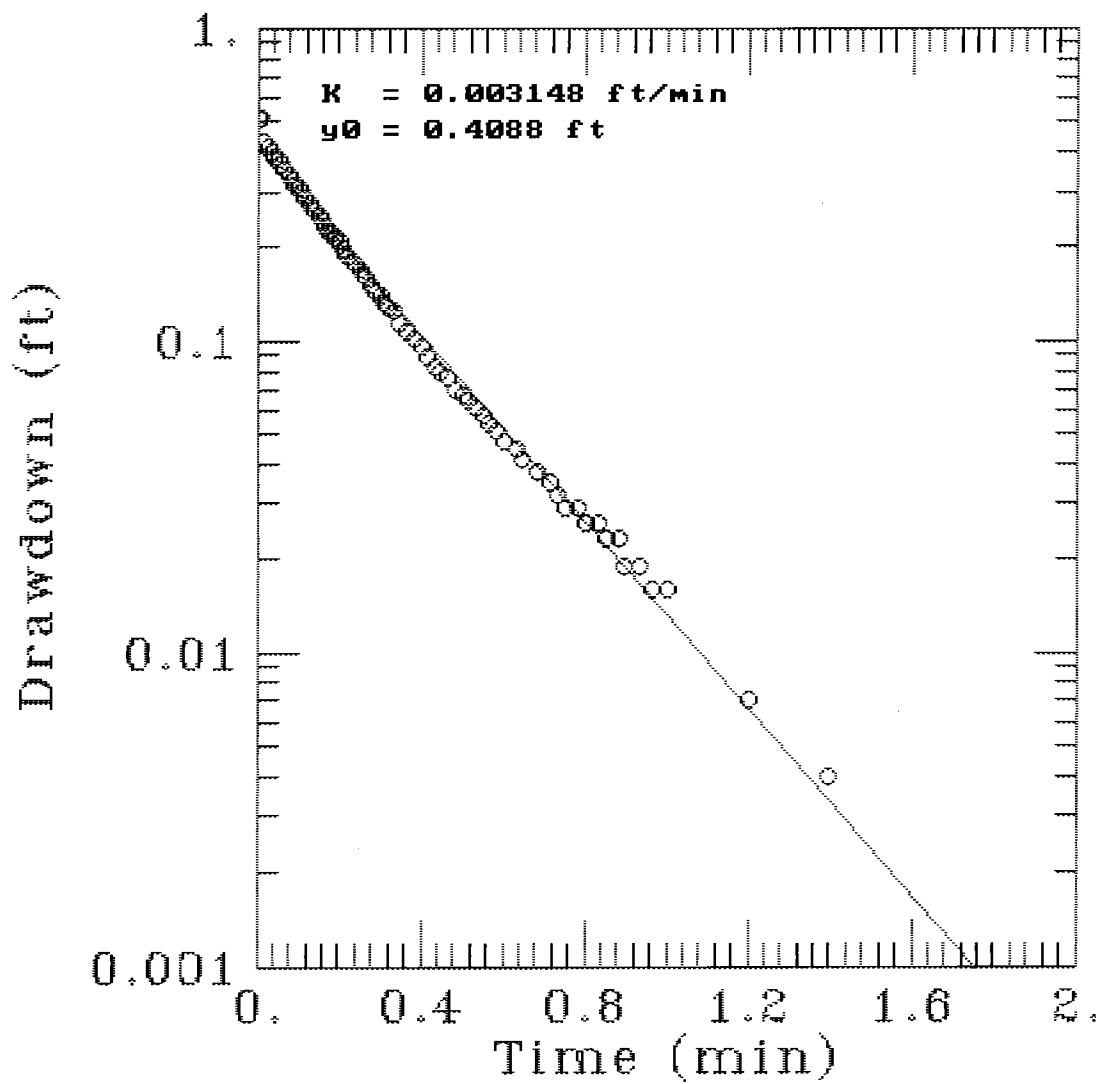
[View Details](#) | [Edit](#) | [Delete](#)

## TYPE CURVE DATA

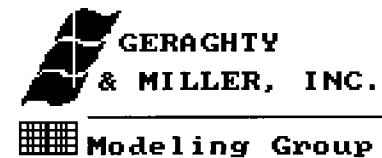
K = 2.43096E-003  
y0 = 5.76995E-001

Time	Drawdown	Time	Drawdown	Time	Drawdown
0.000E+000	5.770E-001	5.000E+000	1.769E-006		

# NSB 2029 MW9 RUN#1



AQTESOLV



GERAGHTY  
& MILLER, INC.

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Modeling Group

# A Q T E S O L V      R E S U L T S

Version 1.10

05/05/94

12:43:46

## TEST DESCRIPTION

Data set..... A:20299R1.SET  
Data set title.... NSB 2029 MW9 RUN#1

#### Knowns and Constants:

No. of data points.....	73
Radius of well casing.....	0.083
Radius of well.....	0.26
Aquifer saturated thickness.....	8.4
Well screen length.....	10
Static height of water in well.....	8.4
Log(Re/Rw).....	2.667
A, B, C.....	0.000, 0.000, 2.245

## **ANALYTICAL METHOD**

## Bouwer-Rice (Unconfined Aquifer Slug Test)

## RESULTS FROM VISUAL CURVE MATCHING

## VISUAL MATCH PARAMETER ESTIMATES

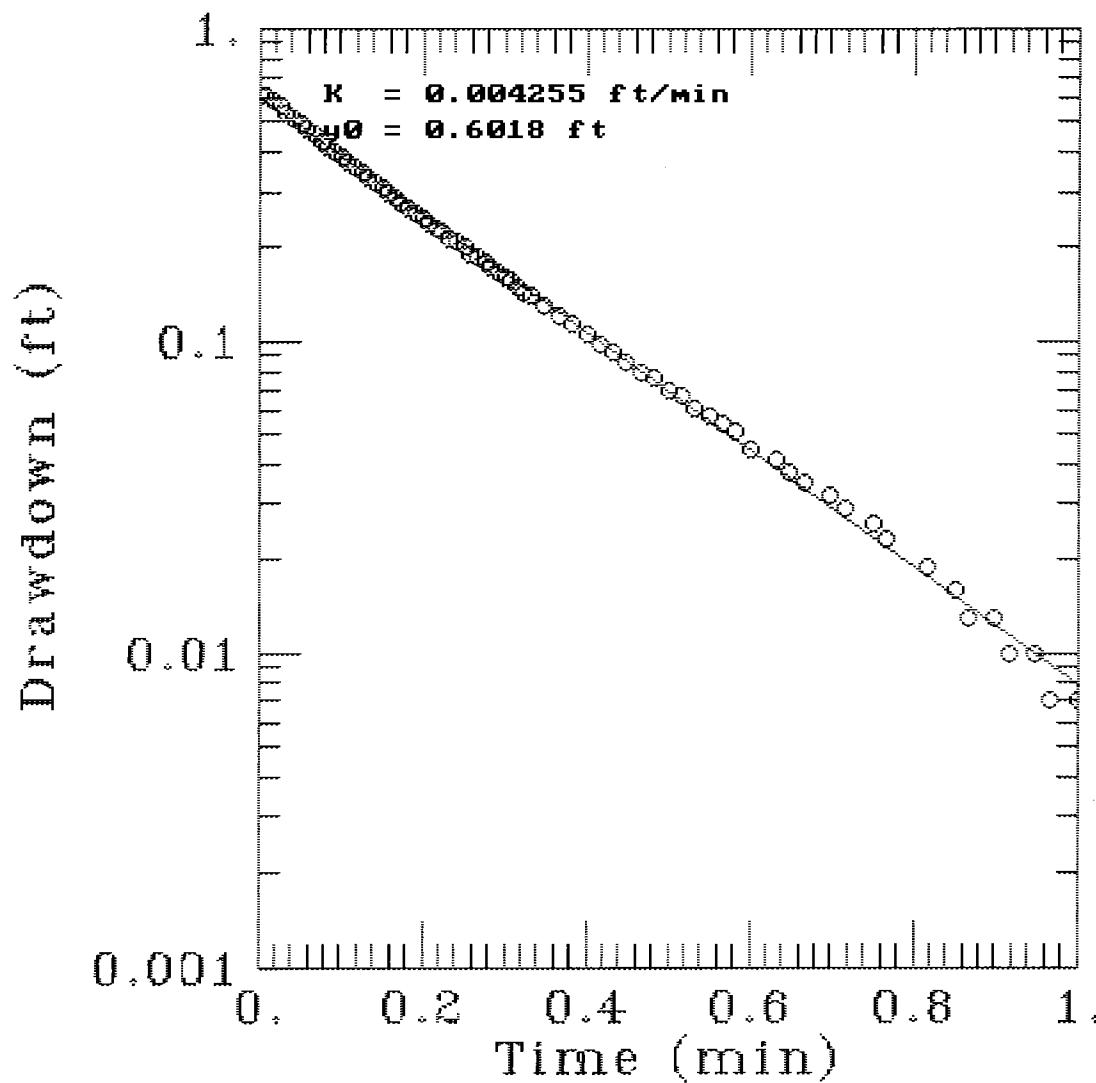
	Estimate
K =	3.1481E-003
y0 =	1.9302E+053

### TYPE CURVE DATA

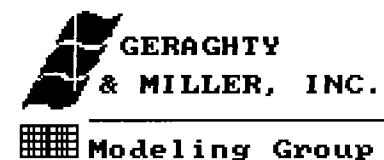
K = 3.14809E-003  
y0 = 4.08755E-001

Time	Drawdown	Time	Drawdown	Time	Drawdown
0.000E+000	4.088E-001	2.000E+000	4.320E-004		

# NSB 2029 MW9 RUN#2



AQTESOLV



# A Q T E S O L V      R E S U L T S

Version 1.10

05/05/94

12:56:41

#### TEST DESCRIPTION

Data set..... A:20299R2.SET  
Data set title.... NSB 2029 MW9 RUN#2

#### Knowns and Constants:

No. of data points.....	71
Radius of well casing.....	0.083
Radius of well.....	0.26
Aquifer saturated thickness.....	11.15
Well screen length.....	10
Static height of water in well.....	11.15
Log(Re/Rw) .....	2.849
A, B, C.....	0.000, 0.000, 2.245

## **ANALYTICAL METHOD**

## Bouwer-Rice (Unconfined Aquifer Slug Test)

## RESULTS FROM VISUAL CURVE MATCHING

## VISUAL MATCH PARAMETER ESTIMATES

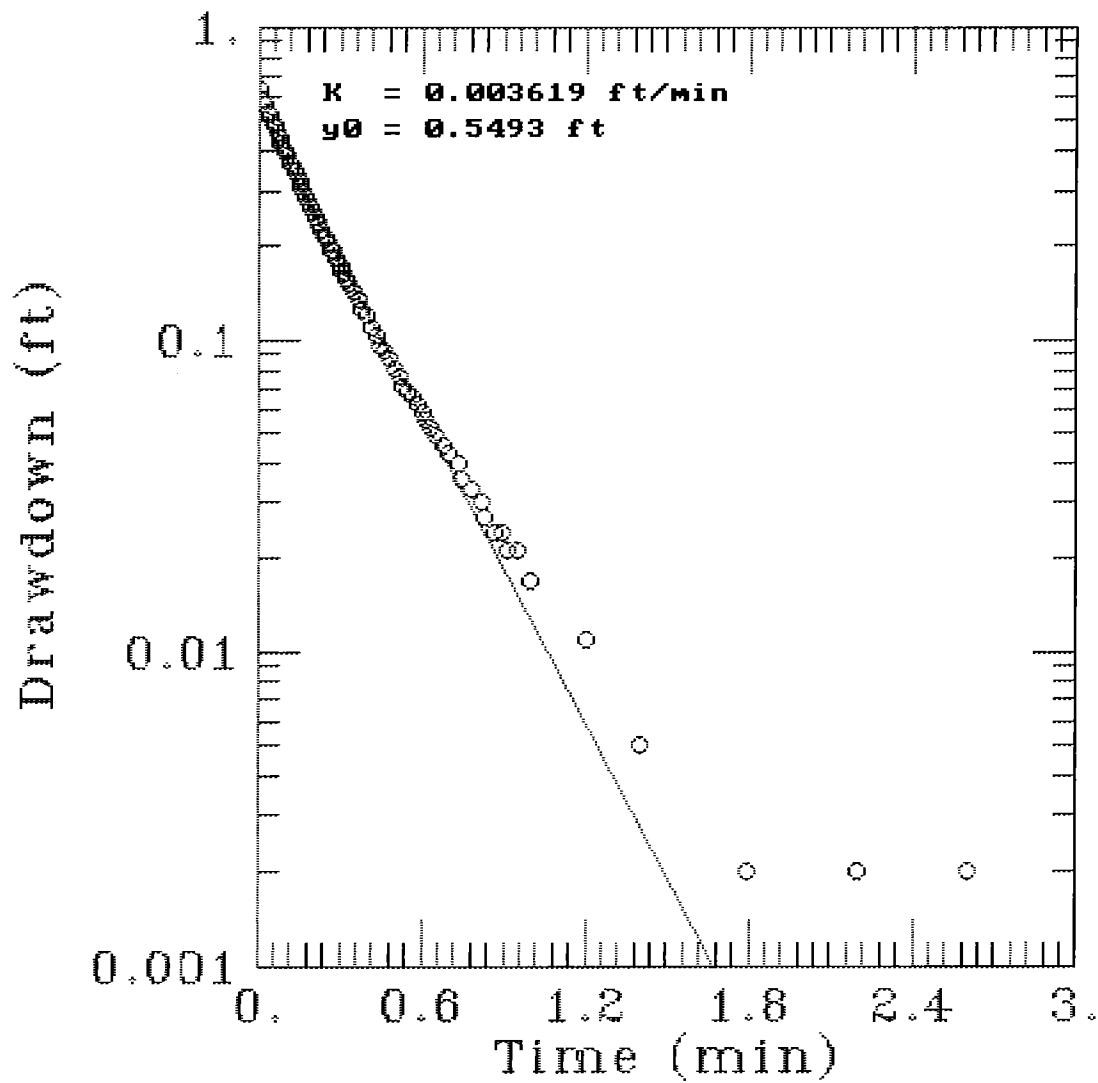
	Estimate
K =	4.2546E-003
y0 =	1.9302E+053

## TYPE CURVE DATA

K = 4.25462E-003  
y0 = 6.01847E-001

Time	Drawdown	Time	Drawdown	Time	Drawdown
0.000E+000	6.018E-001	1.000E+000	7.877E-003		

# NSB 2029 MW9 RUN#3



AQTESOLV  
GERAGHTY  
& MILLER, INC.  
Modeling Group

# A Q T E S O L V      R E S U L T S

Version 1.10

05/05/94

13:04:43

## TEST DESCRIPTION

Data set..... A:20299R3.SET  
Data set title.... NSB 2029 MW9 RUN#3

#### Knowns and Constants:

No. of data points.....	76
Radius of well casing.....	0.083
Radius of well.....	0.26
Aquifer saturated thickness.....	10.02
Well screen length.....	10
Static height of water in well.....	10.02
Log(Re/Rw).....	2.781
A, B, C.....	0.000, 0.000, 2.245

## ANALYTICAL METHOD

## Bouwer-Rice (Unconfined Aquifer Slug Test)

## RESULTS FROM VISUAL CURVE MATCHING

## VISUAL MATCH PARAMETER ESTIMATES

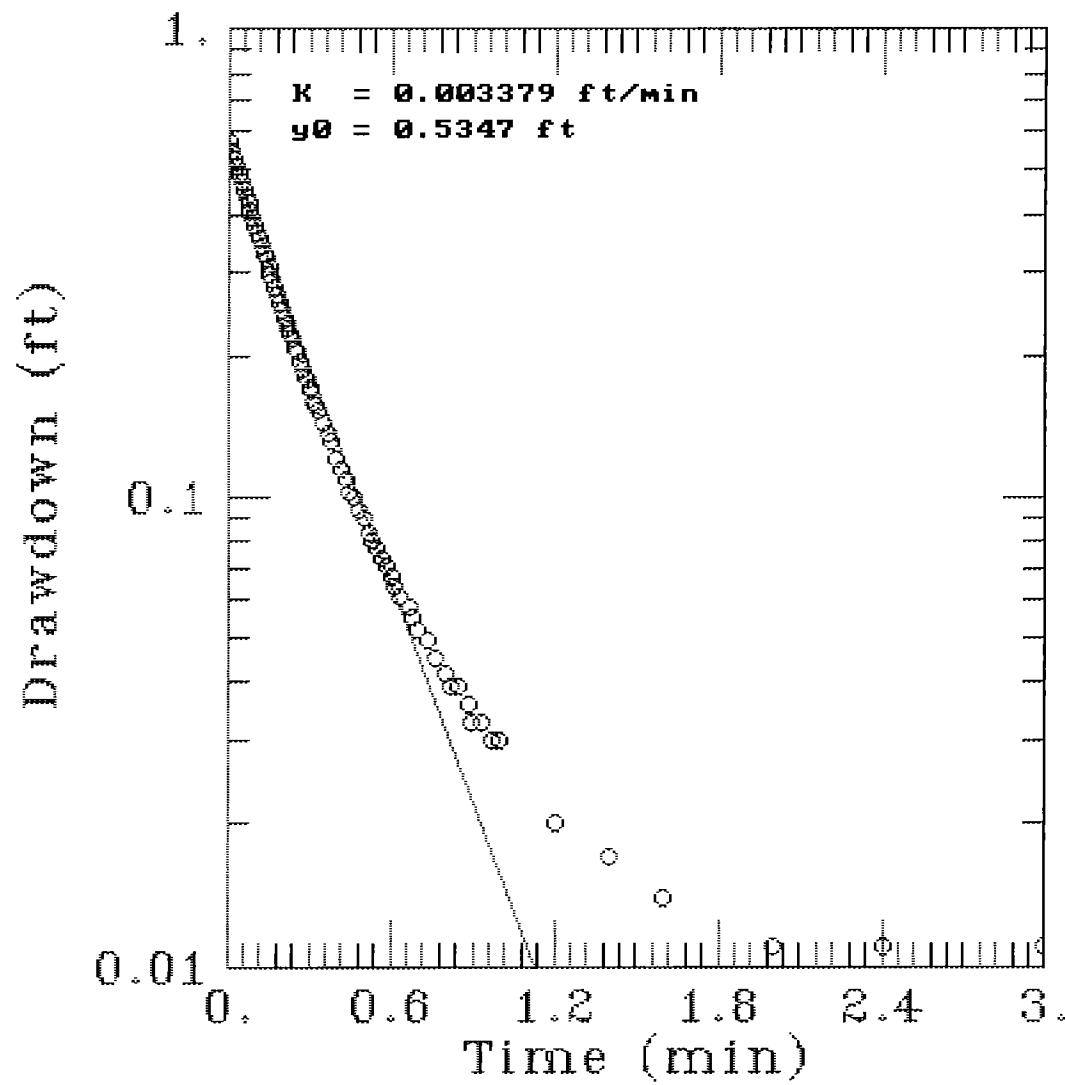
	Estimate
K =	2.6521E-003
y0 =	1.9302E+053

### TYPE CURVE DATA

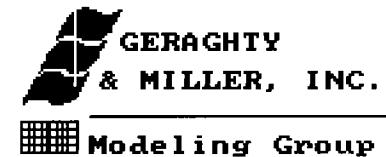
K = 3.61915E-003  
y0 = 5.49343E-001

Time	Drawdown	Time	Drawdown	Time	Drawdown
0.000E+000	5.493E-001	3.000E+000	6.563E-006		

# NSB 2029 MW9 RUN#4



AQTESOLV



# A Q T E S O L V      R E S U L T S

Version 1.10

05/05/94

13:25:13

## TEST DESCRIPTION

Data set..... A:20299R4.SET  
Data set title.... NSB 2029 MW9 RUN#4

#### Knowns and Constants:

No. of data points.....	77
Radius of well casing.....	0.083
Radius of well.....	0.26
Aquifer saturated thickness.....	10.03
Well screen length.....	10
Static height of water in well.....	10.03
Log(Re/Rw) .....	2.781
A, B, C.....	0.000, 0.000, 2.245

## **ANALYTICAL METHOD**

## Bouwer-Rice (Unconfined Aquifer Slug Test)

## RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.7203E-003
y0 =	1.9302E+053

### TYPE CURVE DATA

K = 3.37865E-003  
y0 = 5.34718E-001

Time	Drawdown	Time	Drawdown	Time	Drawdown
0.000E+000	5.347E-001	3.000E+000	1.360E-005		

**HYDRAULIC CONDUCTIVITY AVERAGE  
NSB KINGS BAY SITE 2029**

**NSB-2029-MW3**

RUN #	K (ft./min.)	K (ft./day)
RUN #1	0.002676	3.85344
RUN#2	0.001428	2.05632
RUN #3	0.002431	3.50064
AVERAGE	0.002178	3.1368

**NSB-2029-MW9**

RUN #	K (ft./min.)	K (ft./day)
RUN #1	0.003148	4.53312
RUN #2	0.004255	6.1272
RUN #3	0.003619	5.21136
RUN #4	0.003379	4.86576
AVERAGE	0.0036	5.18436

SITE AVERAGE	0.002889	4.16058
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**APPENDIX G**  
**PUBLIC WATER SUPPLY WELLS MAP**